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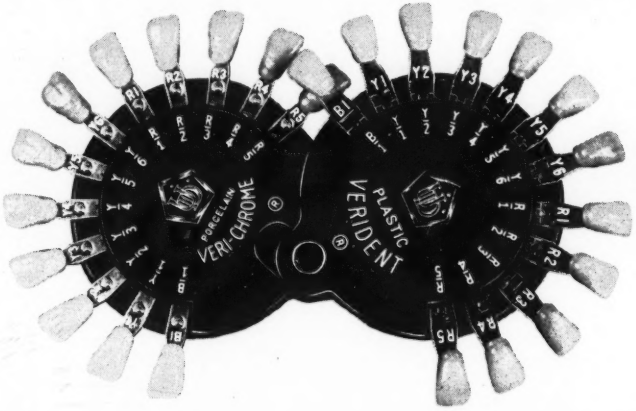

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Presenting PERIODONTIA *to the Patient*

DON M. BALL, D.D.S., Cincinnati

DIGEST

This article discusses the procedure that the author follows during the first appointment with the periodontia patient. It is a step-by-step plan that the dentist should follow for the examination, education, and presentation of periodontal problems to the patient.

Reasons for Neglect of Periodontal Treatment

The following are some of the basic reasons for the neglect of treating periodontal conditions in a dental practice:

1. The dental patient is informed about restorations, bridges, extractions, and dentures but has little knowledge of gingival health and disease in preventive dentistry.

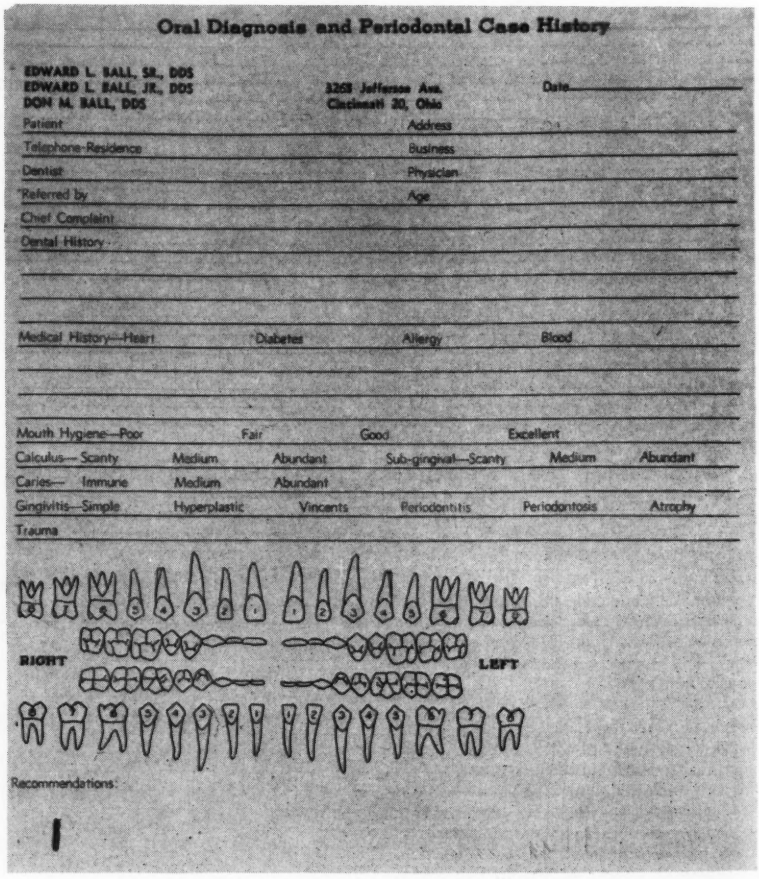
2. Dental schools, in the past, have stressed restorative dentistry, prosthetics, and oral surgery, rather than periodontal therapy.

3. The dentist does not take the time to educate the patient to appreciate the importance of a healthy gingival foundation. The reason for this may be twofold: (A) The dentist neglects this procedure because he thinks the patient will object to the cost of the treatment, (B) he may prefer to omit periodontal treatment in his practice because he prefers to replace the periodontally infected teeth.

Healthy Gingival Tissue a Requisite—Operators who practice superior dentistry include periodontia in their techniques. They realize the importance of a healthy foundation for whatever restorative or reconstructive dentistry is required.

Patient Acceptance Encouraged—By making periodontia the basic part of his treatment plan, or by referring the patient to a periodontist, the dentist's responsibility becomes more satisfying. After the completion of the periodontal treatment, the patient will appreciate the advantages of a healthy gingivae and will accept more readily the remainder of the treatment planned.

Treatment Plan a Necessity—All dentists should have a routine plan of examination, education, and presentation so that the patient may receive the benefit of knowing the necessary treatment required, why it is required, and if completed, what it will cost him. The procedure outlined



1. ***Diagnostic and periodontal history sheet.***

here is one that is used in a periodontal office during the first visit. This method could be used in a general practice along with the necessary restorative and reconstructive measures.

Materials Used in Presentation

1. History sheet
2. Dental mirror and periodontal probe
3. Patient's roentgenograms and models
4. Hand mirror
5. Human maxilla and mandible
6. Book containing photographs
7. Prepared models

History

A complete dental and medical history of the patient is taken using a prepared form (Fig. 1).

Examination of the Patient

(A) *Clinical Examination*—This will reveal the following conditions:

1. Mobility of the teeth
2. Depth of the gingival sulcus or periodontal pocket
3. Occlusion and edentulous areas.

(B) *Dental Roentgenograms*—The following conditions will be disclosed by the roentgenograms:

1. Condition of the teeth
2. Height and shape of the supporting bone
3. Condition of the peridontal membrane

2. ***The view the patient has in the hand mirror, showing the actual periodontal pocket and suppuration.***

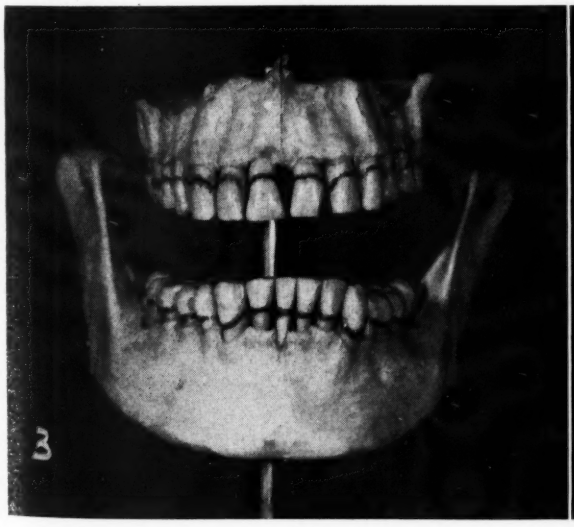
(C) The Patient's Model—A careful study is made of the model.

Patient Education and Presentation of Conclusions

After the patient's history has been taken and the examination completed, the dentist forms his conclusions as to the type and extent of the treatment that will be necessary; he then makes the following statement which is his basic belief or philosophy:

"Every useful tooth should be retained as long as possible if there is no infection: (1) No one should have infection. (2) If the infection is eliminated and a useful tooth is saved, we believe the best possible therapy has been achieved."

Method Used in Explanation—A clean professional hand mirror is given to the patient so that he can see into the mouth while it is explained what has been found in the examination and the treatment that will be necessary.



3 ***and*** **4.** ***Anterior and lateral view of the human maxilla and mandible used by the dentist to demonstrate dental conditions to the patient.***

5, 6, and 7. ***Several pages from the leather-bound book is shown the patient.***

Periodontal Pockets—The dentist comments, "what we look for are periodontal or pyorrhea pockets between the gingival tissue and the tooth." The periodontal probe is placed in the pocket and shown to the patient. If there is any suppuration, this is also indicated (Fig. 2).

Manner of Pocket Formation—The dentist explains, "This pocket is formed either by gingival tissue extending too far above the bone that supports the teeth, or bone receding around the teeth while the tissue has remained in the correct position." The dentist indicates other areas of periodontal infection, malocclusion, mobility of the teeth, edentulous areas, esthetics that could be improved, and the teeth that cannot be saved.

Conditions Visualized—The dentist indicates on the patient's roentgenograms the height of his supporting bone, compared with that of normal bone. The human maxilla and mandible are shown (Figs. 3 and 4) and it is indicated what happens to the supporting bone in a person who has periodontal infection. Visualization with an actual maxilla and mandible impresses the patient more dramatically than explanations using manufactured models or plaster models. Attention should be drawn to the teeth that could have been saved and to those which should have been removed.

8 and 9. ***Prepared models for explanation of surgical treatment to the patient.***

Treatment Plan

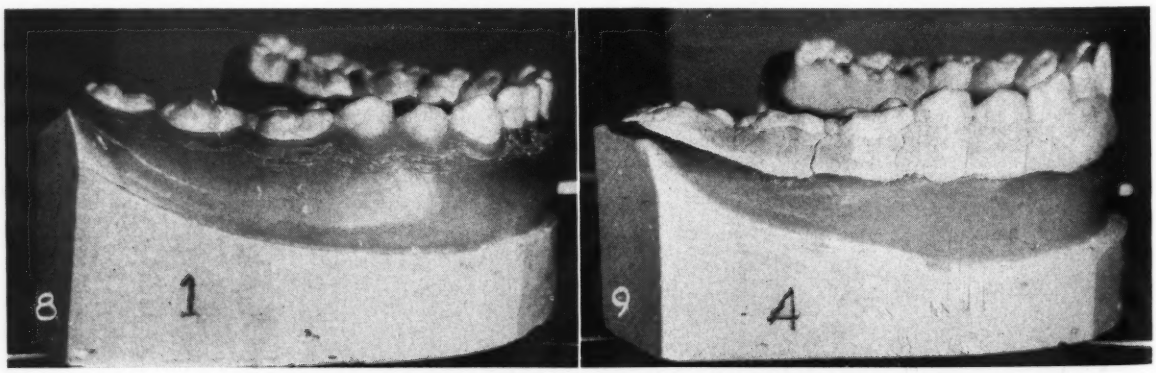
The treatment plan is outlined. Subgingival curettage or surgical procedure may be indicated. A leather bound book with actual case photographs (Figs. 5, 6, and 7) illustrating what can be expected at various stages of treatment is shown the patient. Large colored photographs are used wherever possible. The four main cases in the book are the following:

1. Result of subgingival curettage
2. Surgical treatment[1]
3. Vincent's infection
4. Atrophy

Discussion

The patient is asked if he has any questions. If he wants to know more about the surgical procedure, the

[1]Ball, Edward L.: Postoperative Results of Gingival Surgery After 15 Years, DENTAL DIGEST **55**:310 (July) 1949.



technique is demonstrated on the prepared models (Figs. 8 and 9).

Quotation of Fee

The fee for the treatment is quoted for the patient after the educative period and before starting treatment.

Conclusion

If carried to its conclusion, the plan outlined in this article should help the dentist to include more periodontia in his practice. Patients will benefit from gingival health which is a basis for fine operative and restorative dentistry. A factor to be noted is that the patient must be educated before the fee is quoted.

3268 *Jefferson Avenue*

Newer Concepts of Protein Metabolism

L. CORSAN REID, A. BERNICE CLARK, and HOWARD A. RUSK, New York

Chemical Imbalance a Result of Tissue Injury

After any disease or injury, such as a simple fracture, a tooth extraction, an infection, or general anesthesia, there results a negative nitrogen, phosphorus, sulfur, and calcium balance with osteoporosis, wasting of tissues and loss of weight.

Tissue Waste Observed—A reflex wasting of tissues has in fact been noted and it has been shown that it is impossible to explain the nitrogen loss as originating in the injured limb. This negative balance reached its peak in two to eight days and frequently it was as long as two months before normal reactions were in operation. The reaction was more pronounced in a severe insult than in a mild one.

Irreversible Changes—It was impossible to reverse the tissue changes with any amount of feeding of any product by any route although the negativity of the nitrogen balance could be reduced. In the case of large-boned manual workers, the negativity of the calcium balance was much greater.

Summary of General Point of View

1. The newer concepts in protein metabolism have profound implications for the understanding of the acute phase of disease or injury, the period of convalescence and the stage of rehabilitation and restoration.

2. There is a dynamic state of body constituents in which all organs and tissues are constantly being degraded and simultaneously synthesized. This process goes on despite any or all vicissitudes to which the organisms may be subjected, and even in an animal starving to death.

3. There is, in the body, a large labile pool of metabolic fragments formed by the fats, proteins and carbohydrates in the diet, as well as by the minerals and vitamins and into which is funneled all the materials from the degradation of the organs and tissues, which goes on continuously. The rebuilding of these structures is by or from the supplies in this labile pool.

4. Whole protein contains components or organizational factors which are more useful to the body than are the constituent parts. It has been abundantly established that the oral route is by far the preferred route of choice for administration.

5. It has been shown that whenever an animal is subjected to an insult to which he is not adjusted, there ensues a predictable series of changes, some of which are harmful, but most of which enormously increase the capacity to withstand stress of all kinds. The initiation of this reaction depends basically on the tripping of the anterior pituitary by the direct action of adrenalin independent of any or all nervous connections.

6. A working hypothesis has been presented that the response to stress gives rise to an inhibition of the enzymes building up tissue with the result that catabolism proceeds uninterruptedly. The negativity of the metabolic balance is due to failure to utilize the abundant fragments in the pool because of inadequate enzyme activity and is not due to a lack of nutritional factors or building blocks.

7. Therapy of the acute phase of disease or injury should be masterful inactivity as far as is consistent with the handling of the actual initiating disturbance.

Therapy During Convalescence—This should be based on the degree of regression in the anterior pituitary and the associated endocrine changes. These can be measured roughly by return of appetite, and gain in weight.

Phase of Rehabilitation—The normal metabolic responses after the chemical changes sustained have subsided must be exploited. It is of practical importance to realize that the stages of diseases are characterized by different types of metabolic responses and require different approaches.

Adapted from *Postgraduate Medicine* **19**:206 (March) 1956.

Physiologic and Functional Approach to ORAL RECONSTRUCTION

MURRAY N. RUBINSTEIN, D.D.S., New York

DIGEST

One result of a developed malocclusion is the habit position of the mandible which usually prevents centric occlusion at true centric relation. Bite planes are used to reposition the mandible physiologically and to orient the planned occlusal restoration.

This article describes the procedure whereby the overall pattern for the orientation of the proposed reconstructed occlusal plane can be pretested. With an adequate trial period of the developed pattern, success in the final result may be anticipated, thereby eliminating unwelcome remake and/or loss of all important abutment teeth. A step-by-step procedure is presented for the management of a case of developmental extreme loss of vertical height.

The case presented was permanently restored by means of full coverage with acrylic veneered cast crowns built to the patterns developed by the bite planes.

Treatment of Case with Complicating Factors

The physiologic and functional approach to reconstruction has proved highly satisfactory in attaining success in treatment. Cases which have been presented previously have since stood the test of time.[1,2] Treatment of another type of case, one with a complication of factors, will be described here.

Case History

The patient, a man aged 44, presented with the complaint (Fig. 1) that he could not masticate comfortably being virtually compelled to chew in vertical movements. There was also temporomandibular pain.

Results of Examination—Clinical examination disclosed developmental loss of vertical dimension and mandibular displacement due to loss of teeth. Lateral movements were difficult to negotiate because of a locked occlusion complicated by extrusion and drift of teeth.

Treatment Goal—The treatment of this case represents a projection of the ideas advanced in the monograph[3] on the subject of case management in oral reconstruction; namely, to attain a physiological occlusion at a proved acceptable working level developed through function of complete dental rehabilitation.

Preliminary Steps in Case Management

A complete series of 18 x-ray pictures (Fig. 2) was taken, including bitewings. Bitewings are necessary as they record more accurately details of pulp anatomy which are prerequisite in crown preparations and are not as well demonstrated in periapical views. The teeth missing were the upper left cuspid and third molar; upper right second bicuspid and third molar; the lower right first and third molars; and the lower left bicuspids, first, and second molars. Of the remaining teeth, those unacceptable because of extremely doubtful condition were the upper right bicuspid and second molar and the upper left bicuspids. The usable teeth remaining in the mouth were the upper right central, incisor, lateral, cuspid, and

1. *Preoperative view.*

[1]Rubinstein, M. N.: Approach to Oral Reconstruction, DENTAL DIGEST **58**:465 (April) 1952.
[2]Rubinstein, M. N.: Mouth Rehabilitation in Practice, DENTAL DIGEST **59**:207 (May) 1953.
[3]Rubinstein, M. N.: Oral Reconstruction: DENTAL DIGEST **61**:24 (January) 1956, idem **61**:68 (February) 1955, idem **61**:112 (March) 1955.

first molar; the upper left central, incisor, lateral, first and second molars; the lower right second molar, cuspid, lateral, and central; and the lower left central, lateral, cuspid, and third molar.

The upper left lateral carried a temporary acrylic shell and had to be devitalized. The supporting bone was generally good throughout.

Study Models Used—Study casts were made and mounted on an adjustable articulator by means of a tentative centric wax registration. Because of failure to restore the missing teeth, the upper left segment (Fig. 3) extruded causing a locking of the lower left cuspid in the upper cuspid space, interfering with free lateral movement. On the right side (Fig. 4) the lower molar was locked occlusally into the upper second molar (palatal area) (Fig. 5) due to this cusp having been sheared away, further complicating lateral movement.

Chewing Range Observed—After the study models were studied the patient's chewing range in tip-to-tip contact was studied (Fig. 6).

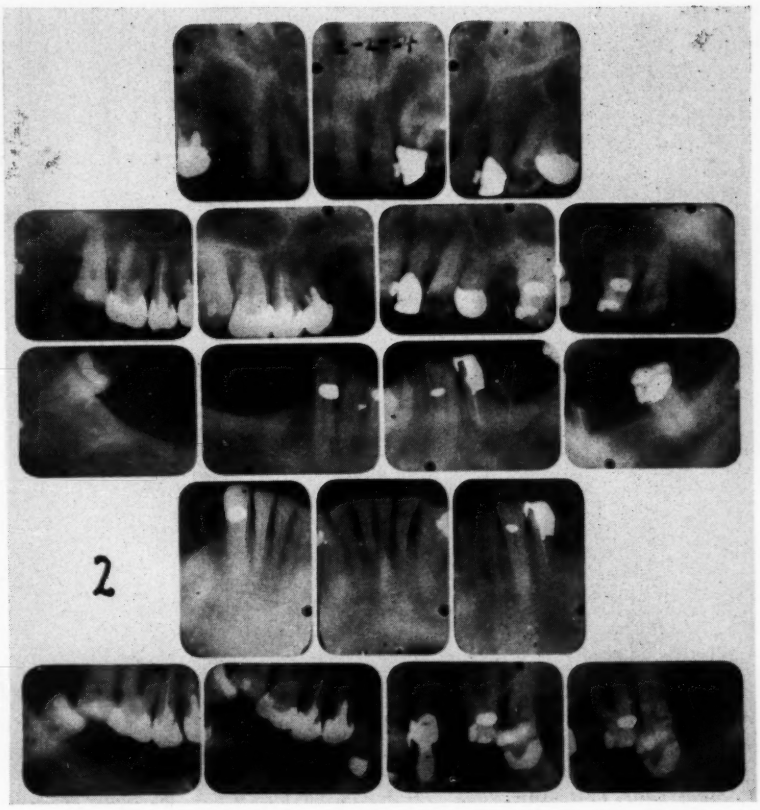
Determination of Physiologic Rest Position and Freeway Space—A simple procedure for determining freeway space has been presented by Pleasure:[4]

1. The patient is seated in the chair at a level position.

2. Two small triangles of adhesive tape (Fig. 7) are attached to the patient's face directly in the midline with the apexes pointing toward each other; one on the tip of the nose and the other on the point of the chin.

3. The patient must sit comfortably erect with the legs uncrossed and hands resting easily on the arms of the chair. The chair back and headrest are depressed so that the patient is in no way supported by them. Removal of the support makes the posture of the head and neck and likewise the intermaxillary relation dependent on normal muscle tonus, through the equilibrium of opposing muscle groups.

4. The patient may be asked to moisten the lips with the tongue or to sip a little water to induce slight mandibular movements. Phonetics and functional aids may also be used to enable the patient to assume the physiologic rest position, an action which tends to bring the mandible back to rest position. After several trials the regularity of return to the tentative physiologic rest position can be checked.



2. ***Radiographic view of the teeth involved.***

5. When the operator is satisfied that the position of the mandible is consistent, a pair of calipers is adjusted lightly to the distance between the apexes of the adhesive triangles on nose and chin. This setting can be checked several times within a few minutes to prove its stability. A reading on a millimeter ruler can now be recorded.

6. The chair is adjusted for the patient's support. He is asked to close to occlusion. The space between the adhesive apexes is again recorded at this position (Fig. 8) and compared with the original record; the difference between the two readings is the freeway space.

Deviation from Normal Recorded—Since it has been established that the average normal freeway space is approximately 3 millimeters anteriorly or 1½ to 2 millimeters at the first molar-bicuspid area, comparison may be made with the patient's recorded position. Any deviation from the normal must be noted in the diagnostic notes taken for correction in the treatment plan.

Freeway Space May be Checked—With this procedure freeway space may be checked at any stage of treatment without noticeable discrepancy. It is not necessary, of course, that the adhesive markers be replaced identically each time as it is only necessary to set the calipers at the most stable interval between them to establish physiologic rest position.

In the case under discussion a freeway space of 6 millimeters was found. Orientation of the proposed occlusal plane was planned well within the freeway space so as to leave approximately 3 millimeters.

[4]Pleasure, M. A.: Correct Vertical Dimension and Freeway Space, JADA **43**:2 (August) 1951.

3. *Study casts. Left projection.*
4. *Study casts. Right projection.*
5. *Study casts. Rear projection. Note the molar lock.*
6. *Tip-to-tip position.*

To Obtain Maximum Distribution of Stress

To obtain maximum distribution of stress,[5] the following factors are of primary importance:

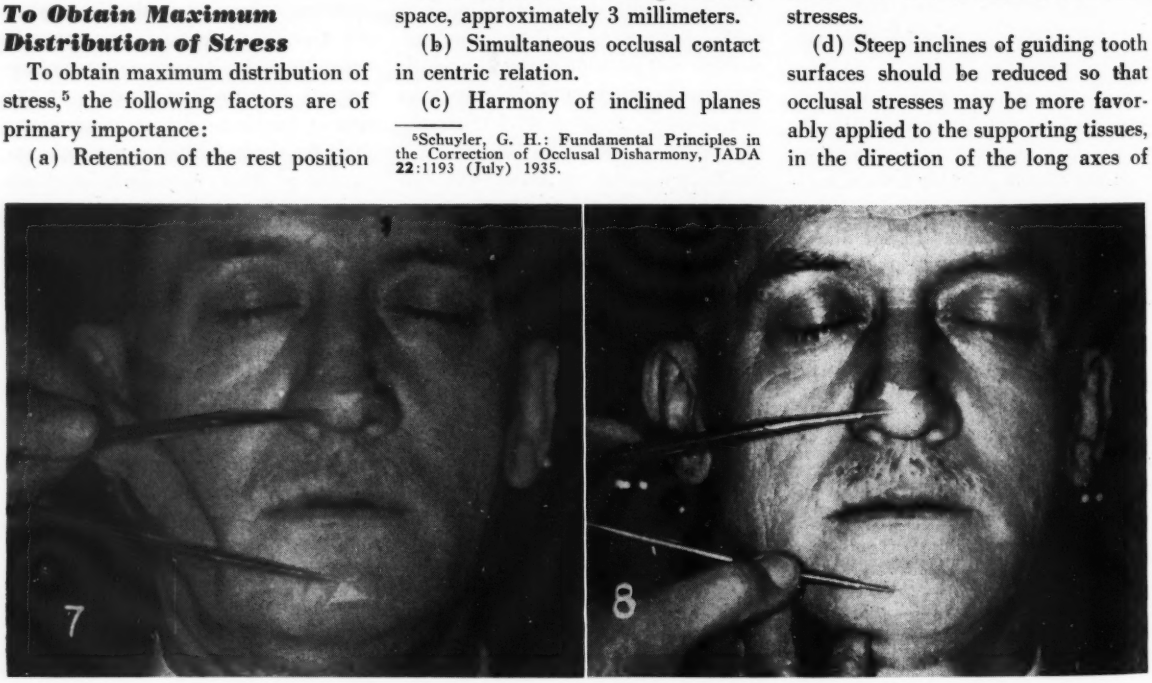
(a) Retention of the rest position and establishment of average freeway space, approximately 3 millimeters.

(b) Simultaneous occlusal contact in centric relation.

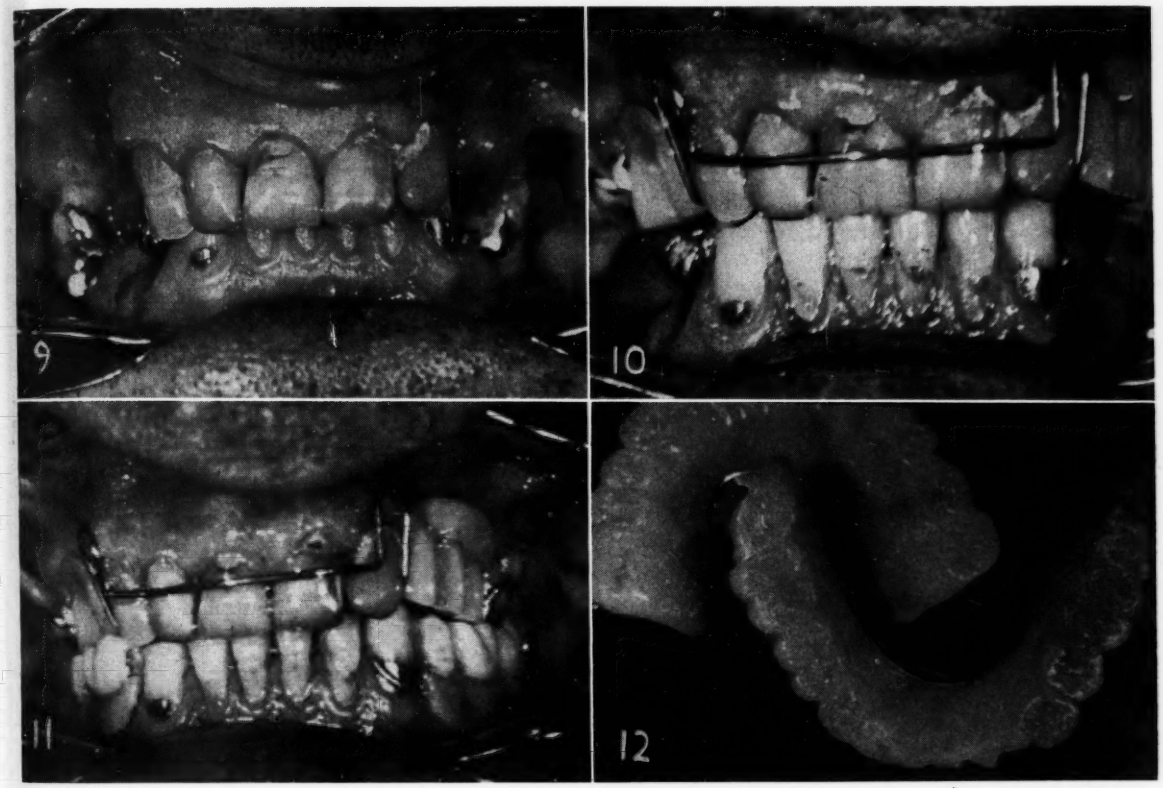
(c) Harmony of inclined planes which will reduce eccentric occlusal stresses.

(d) Steep inclines of guiding tooth surfaces should be reduced so that occlusal stresses may be more favorably applied to the supporting tissues, in the direction of the long axes of

[5]Schuyler, G. H.: Fundamental Principles in the Correction of Occlusal Disharmony, JADA **22**:1193 (July) 1935.



7. *Measurement of physiologic rest position.*
8. *Measurement of centric occlusal contact.*



9. *Overbite was further increased upon removal of hopeless bicuspids.*

10. *Hawley bite plane introduced.*

11. *A lower flat plane was introduced to complement the amended upper teeth for occlusal contact on a flat plane.*

12. *Bite planes carved to facilitate mastication.*

the teeth. The planes of the teeth should be restored at a level and degree consonant with the age of the patient.

(e) Retention of tooth anatomy to secure sharper cutting cusps and good sluiceways.

(f) The clinical crown should be definitely shorter than the length of root surrounded by bone. This is a biomechanical requirement.

(g) The buccolingual diameter of all rebuilt teeth should be kept to a minimum. This will tend to reduce the stress of mastication by confining the load in a line with the long axes of the teeth where it can best be tolerated.

(h) It is essential to secure lateral balance on the working side in eccentric positions of the mandible for the maximum distribution of stress. If possible, bilateral balance should be obtained. Secure a functionally optimal occlusion that will permit free gliding or sliding movements.

Treatment planning must be predicated on the foregoing factors to assure success.

Procedural Steps in Treatment

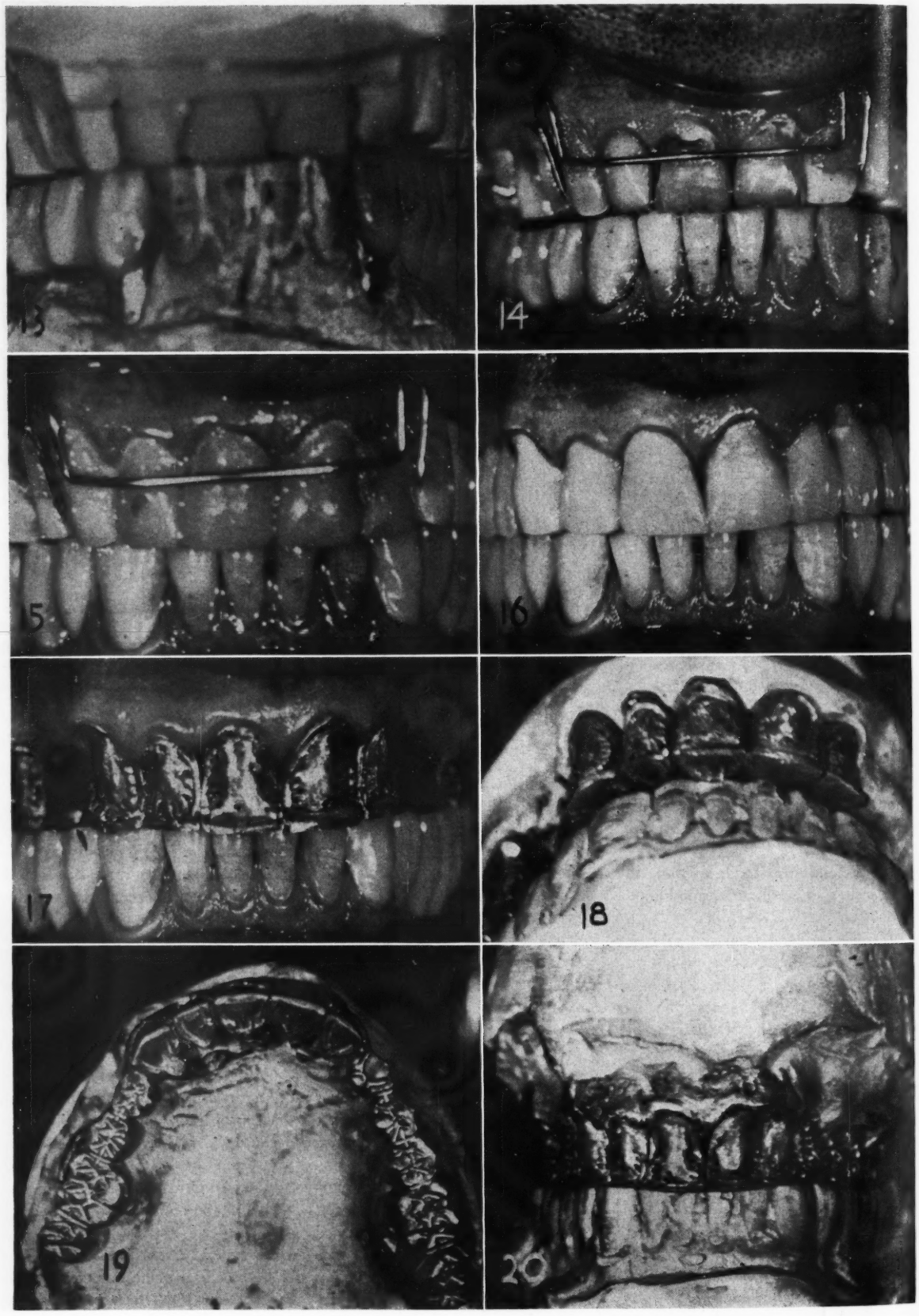
The first step in treatment was to remove the teeth designated as hopeless. In Figure 9 is shown an increase of the overbite because of the removal of prevailing stops.

Periodontal treatment was then started to achieve an optimum of gingival health which for obvious reasons is necessary before any preparations are undertaken.

Bite Plane Introduced—Concurrently with the periodontal treatment, a Hawley bite plane was introduced (Fig. 10). This had a labial frame and palatal shelf built up at a height a little more than was actually required in order to decide from functional comfort what height the patient could ideally negotiate and maintain. The height was started almost equal to the tip-to-tip incisal contact and was reduced in daily visits, depending upon the patient's reactions. At a point where the freeway space registered approximately 3 millimeters the bite plane height was maintained for two or three weeks with satisfactory response from the patient.

Pain Relieved—The temporomandibular pain ceased soon after introduction of the bite plane. This occurs because the plane frees the musculature from the habit position caused by induced guidances and thus causes return of the mandible to its true position.

Lower Flat Occlusal Plane—A lower flat occlusal plane was constructed to function with the upper Hawley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13. ***Trial acrylic bridges fabricated against the model of the upper teeth with the Hawley bite plane in place.***
14. ***Temporary bridges in position. Occlusion to be adjusted.***
15. ***Lower veneered bridges in the mouth. Upper teeth are restored with self-activated acrylic.***
16. ***Heat-cured acrylic trial pattern of upper prosthesis.***
17. ***Veneered crowns are fitted to the mouth.***
18. ***Palatal view of centric occlusal contact to provide for overjet.***
19. ***Occlusal projection of assembled bridge. Note the occlusal carving and minimum buccolingual width.***
20. ***Buccolabial view of the completed bridge restoration.***

which was amended to supply modified contact posteriorly on a flat plane thus still permitting the patient a free range of movement (Fig. 11).

Cusp Forms Simulated—With patient comfort secured, the occlusal planes were carved to simulate cusp form to permit easier mastication (Fig. 12). After a further successful trial period of about two weeks the treatment plan for permanent correction was prepared.

Full Coverage Method of Choice—The upper teeth had excellent distribution of abutments. The lower arch was not ideal because of the long span, but due to extremely high lingual muscle attachments to the crest of the ridge bilaterally, it was felt that radical surgery would be required. After discussion with the patient, it was decided to chance fixed bridgework. It was decided that if the occlusion could be rebuilt on a permanent basis to the existing comfortable relationship secured functionally by the occlusal planes, success would be assured in maintenance of the comfort already achieved.

Technique Employed

The technique employed included the following steps:

1. The lower teeth were prepared for acrylic veneered crowns. Heat-cured temporary acrylic bridge restorations were constructed on this model as a pattern to test further patient comfort and management. To ensure faithful reproduction of vertical height, these were waxed up against a model of the upper with the Hawley in position (Fig. 13).

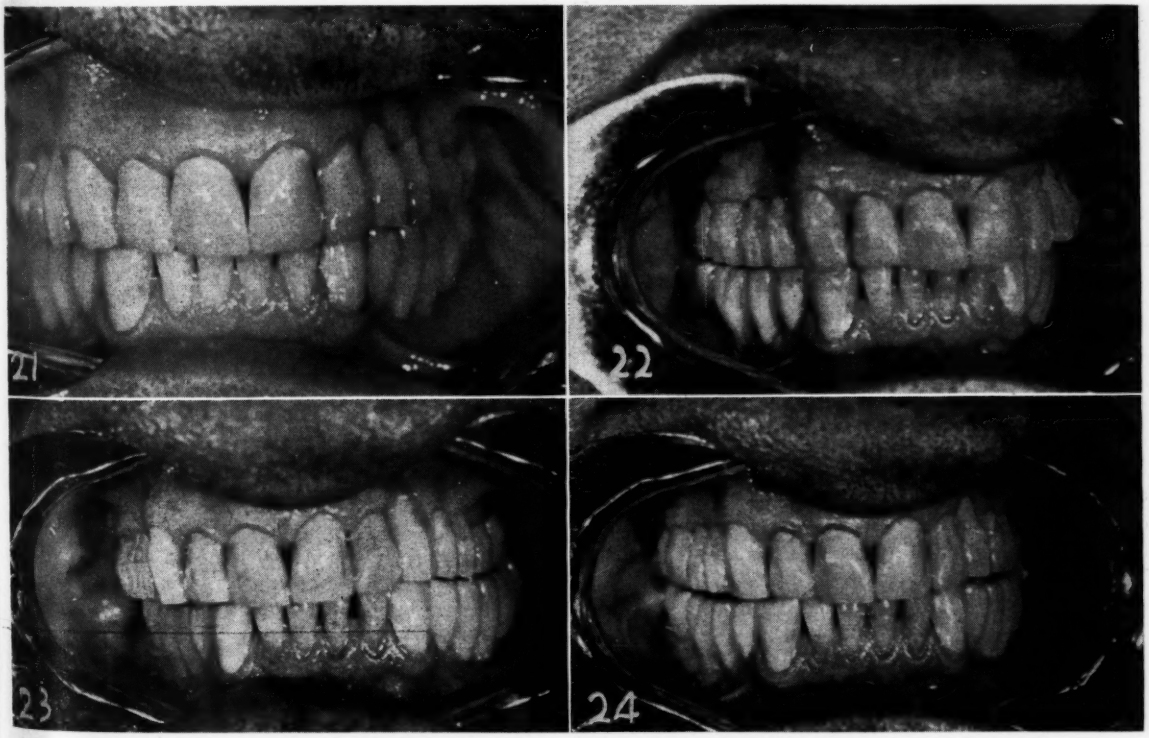
2. The bridges were constructed to yield an ideal anteroposterior curve and were worn for two weeks after adjustments were made on the upper to accommodate the ideal plane (Fig. 14).

3. When the patient reported satisfaction with the temporary bridges, the permanent gold veneered crowns and bridgework were completed and placed with temporary cement (Fig. 15). The next step in procedure is shown in Figure 15.

4. The upper teeth were prepared and restored with immediate self-activating acrylic.[6] The posterior section on the Hawley was built up to function in balance with the lower restorations.

5. An impression was taken of the upper teeth with cast silver transfers

[6]Rubinstein, M. N.: Simplified Technique for Immediate Acrylic Restorations, N.Y.J. Dent. **25**:219 (June) 1955.



21. ***The completed case. Centric relation is shown.***
22. ***The completed case, right lateral.***
23. ***The completed case, left lateral.***
24. ***The completed case in protrusive position.***

on the teeth and the bite plane in position in the mouth. The bite was also registered with the bite plane in the mouth. This provided a working model of conditions that have proved satisfactory in the mouth and likewise provided the necessary stops for the technician to wax accurately the height of the reconstructed crowns.

6. Again use was made of a heat-cured acrylic trial pattern (Fig. 16) of the upper prosthesis which gave further opportunity to pretest the permanent reconstruction. Some slight adjustments were made to secure refinement of the balancing in the try-out period. After a few weeks of successful trial of the acrylic pattern permanent veneer crowns were constructed.

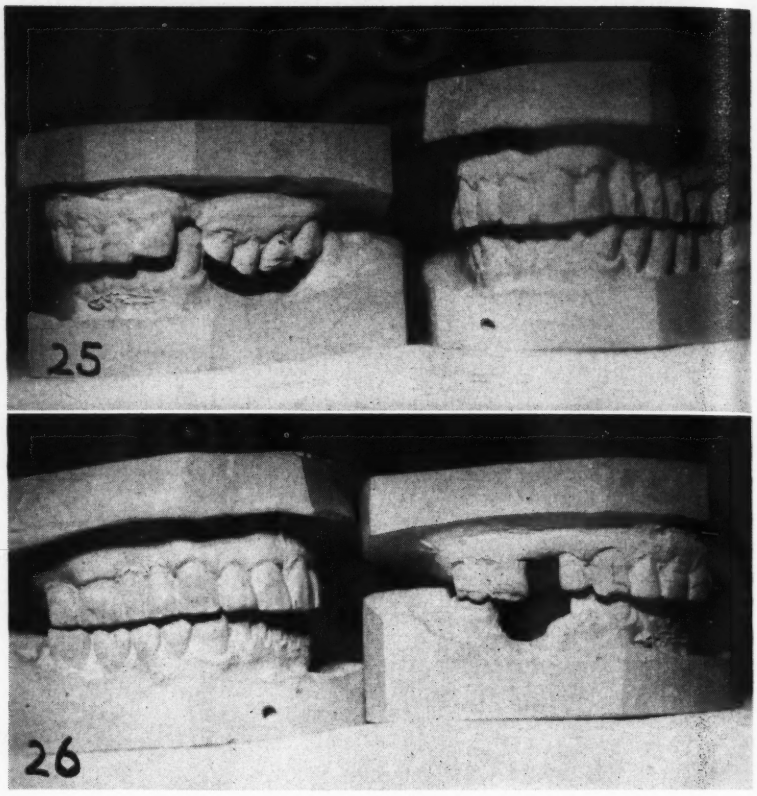
Final Steps Illustrated

1. The permanent crowns were fitted to the teeth (Fig. 17), trimmed, and a plaster registration of the bite was taken to permit accurate mounting of the master impression which was taken with the crowns in position.

2. Figure 18 shows how the palatal surfaces of the anterior teeth were designed to maintain centric occlusion despite the overjet present. Figure 19 shows the occlusal aspect of the assembled bridge. Note the well-carved occlusal surfaces and minimal buccolingual width. The metal has been gold plated for better color control of the acrylic veneer.

3. The buccal and labial aspect of the completed gold technique is shown in Figure 20. All the crowns have gingival collars and boxing to seal in the acrylic.

4. Figure 21 is an illustration of the completed case in the mouth in centric. Slight check marks add to the natural appearance of the veneer crown. Figure 22 shows the right lateral position, Figure 23 the left lateral, and Figure 24, the protrusive.



25. ***Comparative views: left view, preoperative, right view postoperative.***
26. ***Comparative views: right view, preoperative, left view postoperative.***

Since this case is one with accompanying overbite, true anteroposterior balance is not negotiable in protrusive.

5. Comparative views of preoperative and postoperative models are shown in Figure 25, left side; and Figure 26, right side.

Comment

It will be noted that the final vertical height on the permanent reconstruction is somewhat reduced from the original height level instituted with the Hawley. Clinical observations throughout case treatment lead to the obvious conclusion that normally this case was one of overbite and overjet and to disregard this relationship in the treatment plan would be unwarranted. Through liberal use of trial periods of successive treatment adjuncts and by making adjustments on a functional dynamic basis, it can be reasonably assured that the case will be successfully maintained.

Conclusion

This method of case management; namely, to establish a comfortable physiologically positioned occlusal plane, and second to reconstruct a permanent prosthesis to a well-tested pattern will afford insurance of a desirable result.

200 *Central Park South*

PORCELAIN INLAYS

Baked in Investment Matrix

ROBERT K. GEORGE, D.D.S., Indianapolis

The esthetic restoration of cavities in anterior teeth has always been a difficult problem in technique. Disappointing results from the use of silicates and resins have refocused attention on the porcelain inlay because of its esthetic and permanent qualities. This article describes a method of baking porcelain inlays without the use of a platinum matrix. The procedure reduces the required time and improves the fit of the inlay.

Indications for Porcelain Inlays

The procedure may be used in the following situations:

1. In all anterior cavities not involving incisal angles.
2. In gingival third areas where esthetics are important.
3. In proximal incisals if the bite is favorable, provided iridioplatinum wire reinforcement is used.

Contraindications

In areas of heavy occlusal or incisal stress the method is not recommended.

Cavity Preparation

1. The parallel walls of the cavity should be parallel.
2. A flat axial seat is required.
3. In proximals the cavity should be prepared so that a pattern may be drawn either lingually or buccally, with conservation of tooth structure in mind.
4. Prepare the cavity with incisal and gingival grooves to provide additional retention.
5. A slight bevel may be placed at the cavosurface angle.
6. The cavity must be deep enough for adequate retention and to secure good color.

Three types of porcelain inlay preparations are shown in Figure 1.

Taking the Impression

The following steps are taken (Fig. 2):

1. Retract the tissue so that all cavity margins are accessible.
2. Moisten with mineral oil.
3. Take the impression with inlay wax using a matrix of metal or a finishing strip to confine the wax to the cavity.
4. Be sure to allow a flash of wax to extend slightly over the margin of the cavity.
5. Remove the wax by teasing with an explorer or air syringe.

Preparation of Model

1. Mount the impression on a common straight pin. This provides a handle (Fig. 3).
2. Mix Neo-brillet investment material with water on a slab to a thick creamy consistency, just thick enough to flow. Paint the pattern with a rather thin mixture. Put the remainder of the thick mixture on a slab, pile it up, and place the impression on this mound. Allow it to set for 20 minutes.
3. Hold the dry model in a flame and remove the bulk of the wax.
4. Place the investment model in the furnace. Carry the heat to 1900° Fahrenheit to dry the model and remove any vestige of wax.

Baking the Inlay

1. The investment model should be handled with cotton pliers (Fig. 4).
2. Place the investment model in a shallow container of grain alcohol until the model is completely soaked.
3. Place a small amount of Steele's Apeo porcelain of a suitable shade in the bottom of the cavity. Vibrate with a serrated instrument against pliers, allowing the invested model to rest against a dry napkin until all the alcohol has been absorbed.
4. Place in the furnace and run to 1800° Fahrenheit which will give a light biscuit bake to the porcelain.
5. Repeat the procedure with a second application of porcelain. This time the porcelain should be carried to the cavity margin, building in a little contour if necessary. Take the heat to 1850° Fahrenheit, giving a little more biscuit glaze to the porcelain.
6. Repeat the procedure, slightly overfilling the cavity and taking great care not to allow the porcelain to go beyond the margin. If the excess does flow over the margin, this can be removed with a fine sable brush moistened in alcohol before firing. Carry this bake to 1875° and hold for one minute which should give a correct final glaze (Fig. 5). This may have to be varied, depending on the speed of the furnace, and the size of the inlay.

Simplified Method of Securing Color

1. Teeth may be classified as light,

medium, or dark according to the following formula: (Trubyte) 60, 61, 62, 66, light; 65, 68, 67, 69, medium; 77, 78, 81, 87, dark.

2. For light shades use a first layer of porcelain, shade 13, second layer, 14, and finish with a layer of shade 18. For medium color, use 14, 15, 18.

3. Dark shades use 15, 16, 18. These combinations may be varied with experience.

Removing Inlay from Investment Model

1. Place the investment model in water.

2. The inlay may be separated easily.

3. Remove the investment with a stiff brush.

4. Boil in dilute nitric acid in a test tube.

5. Place in bicarbonate solution. Brush with soap and water.

6. Any small flash of porcelain can be removed with a diamond stone. Margins of inlay should be sharp and distinct.

Proximal Incisal Inlays

1. Proximal incisal inlays are prepared in a conventional manner with a flat gingival seat and incisal step.

2. A ½ round bur is used to sink a hole in the gingival seat and incisal step. Into the hole is fitted 24-gauge iridioplatinum wire, staple shaped so that the loop projects into the missing incisal angle.

3. The impression is taken with a copper band and wax with platinum post in position.

4. The pin withdraws with the impression and will be in place in the investment model.

5. The porcelain is added in three bakes exactly as in the case of other types of cavities.

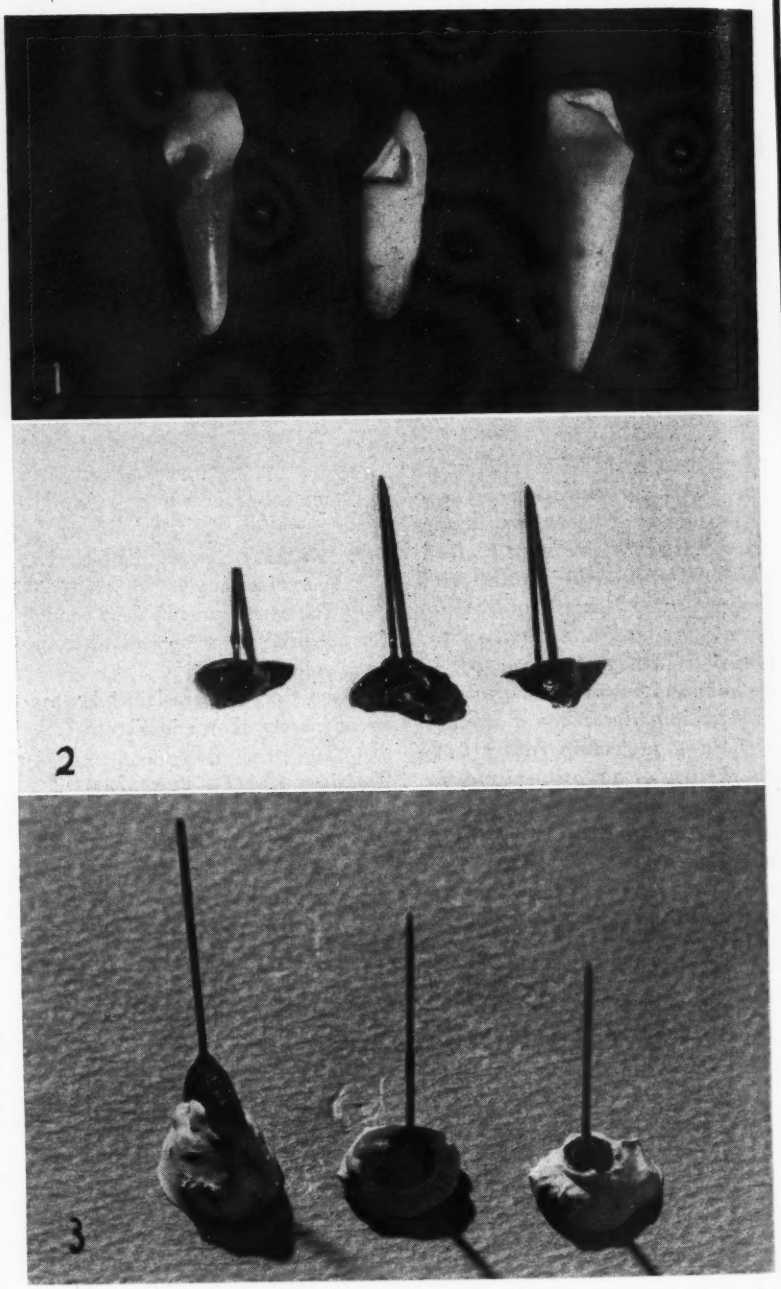
6. Care should be taken to build out the angle sharply on the first bake.

7. The second and third bakes will be laminated over the first bake and given a correct shade.

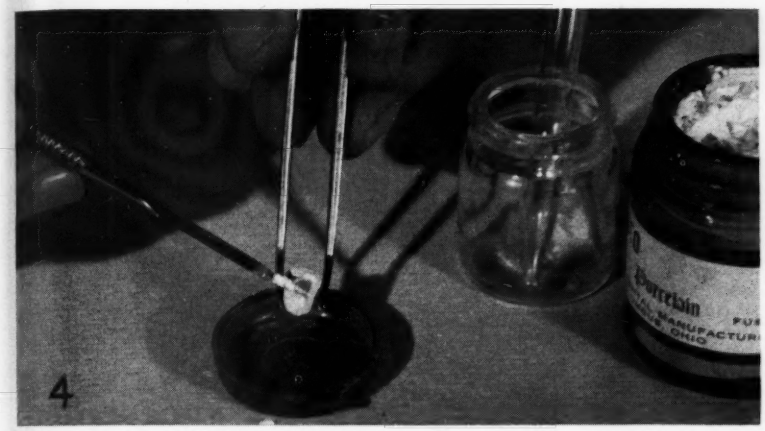
Cementation

1. The cavosurface position of the inlay will have a frosted finish ideal for adhesion of cement. If the retention does not seem adequate in shallow cavities, small undercuts may be placed in the axial marginal walls with round burs. In some cases undercuts may be placed in proximal walls of the inlay with diamond stones to improve retention.

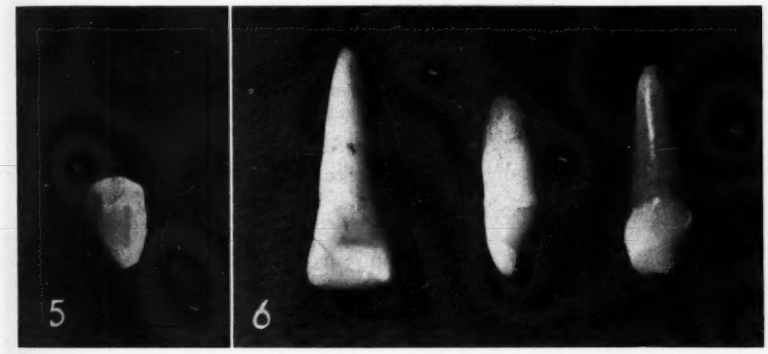
2. The inlays are cemented with a



1. ***Three typical porcelain inlay preparations:*** **(1)** ***Gingival third in cuspid.*** **(2)** ***Proximal in a lateral.*** **(3)** ***Proximal incisal in a central.***
2. ***The impressions are taken with inlay wax and mounted on pins for convenience in handling.***
3. ***The wax patterns are painted with a thin mix of the investment and then inverted on a thick mix of investment placed over a glass slab. (Neo-Brillet investment is used.)***



4. *Shallow container for soaking the investment model. It is then grasped with pliers and moistened porcelain is placed in the cavity and vibrated with a serrated instrument.*



5. *Showing a proximal inlay brought to final bake before removal from the investment.*

6. *Three inlays in position in the teeth.*

7. *A proximal inlay in the lower left lateral incisor.*

semisilicate cement, Di-Cem or similar cement. Shade 20 is used for a light shade, 21 for medium, and 22 for dark inlays.

3. The cement should be mixed rapidly to creamy consistency. Place the cement in the cavity and on the inlay, position with an orangewood stick. Protect margins with cocoa butter until the cement is completely set.

4. Remove excess cement, lightly disc with sandpaper and cocoa butter (Fig. 6).

Advantages of Porcelain Inlays Made Without Platinum Matrix

1. Elimination of a platinum matrix gives a better margin.

2. Esthetics are superior to most other anterior restorations.

3. Investment gives a frosted surface to the inlay more favorable for retention.

4. Proximal grooves can be used in proximal inlays as it is not necessary to withdraw the platinum matrix.

5. Porcelain inlays do not wash out in the mouth. They give maximum service.

6. The inlays seem to be anticariogenic. Recurrence of caries is seldom found around or under a porcelain inlay.

7. The porcelain inlay preserves contact surfaces as resistance to wear is high.

8. Clinically, the inlays have a record for service comparing favorably with gold foil (Fig. 7).

Conclusion

Used judiciously, the porcelain inlay will add to the reputation of the operator and render a valuable service to the patient. The technique is useful in the unremitting battle against the ravages of caries. The attractive porcelain inlay combines the ancient art of the ceramist with the meticulous operative skill of the alert modern dentist.

507 *East 34th Street*

Simple Procedure to Compensate for SETTLING *of* UPPER DENTURE

IRVING H. GOLDSTEIN, D.D.S., Atlanta, Georgia

DIGEST

This article presents a step-by-step technique for restoring suction to an upper denture which, although well constructed and satisfactory, has lost this quality.

Incident of Loss of Suction

It is not unusual for an upper denture that is well constructed and completely satisfactory to lose some of its suction. The following are some of the conditions which contribute to loss of suction:

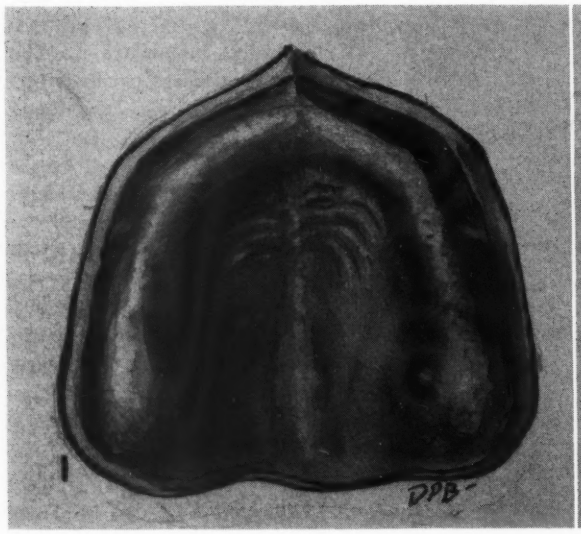
1. Sometimes the denture settles and makes first contact in the vault area. This sometimes happens even though a relief measure has been placed in the area. It may occur where there has been no relief area at all.

2. Loss of suction frequently occurs where there is an extra hard area of protuberance on the hard palate. These formations are usually normal bone and are referred to as Torus Palatinus (Fig. 1).

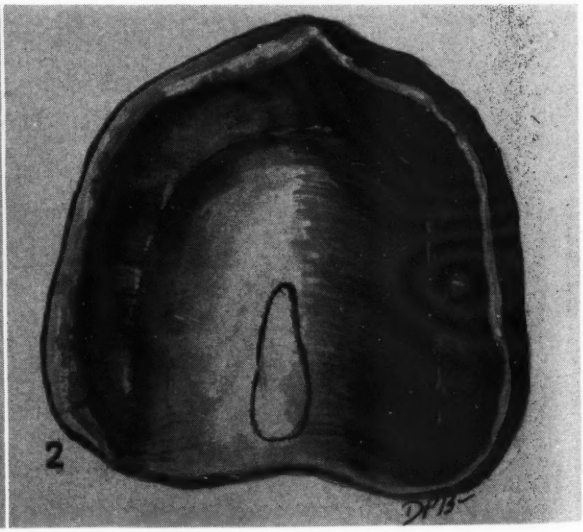
Serious Problem May Develop—When the denture has settled or growth of the torus has continued so that the denture again makes contact at this point, a serious problem develops both from pain and soreness and the problem of the loss of suction due to "riding" on this area.

Simple Measure Sometimes Successful—Frequently by relieving the area in the vault of the denture at the spot making the contact with a sand paper cone the denture will be allowed to settle further and give renewed suction.

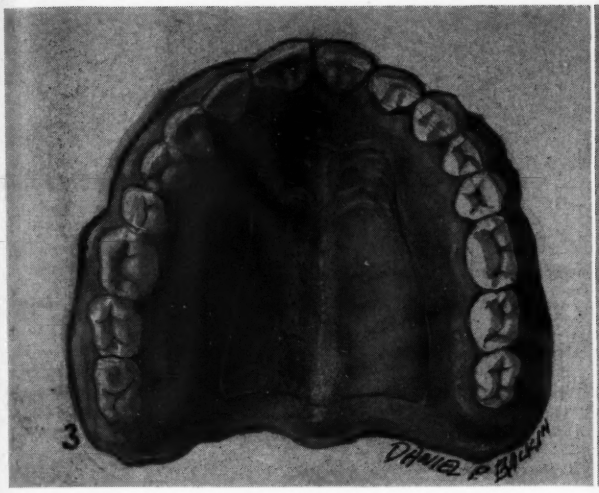
Possibility of Perforating the Denture—Relief with the use of sandpaper is satisfactory when the denture has enough thickness in the area to allow for the trimming of relief. In most cases, however, the denture is fairly thin where relief is desired and additional trimming will perforate the denture.



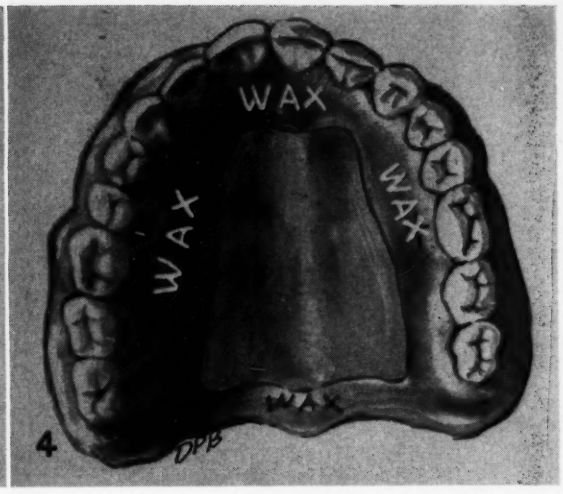
1. ***Loss of suction frequently occurs where there is an extra hard area or protuberance on the hard palate. These formations are usually normal bone and are referred to as Torus Palatinus.***



2. ***Check the spot of irritation with indelible pencil or marking paste to see where the denture makes its first contact with the patient's palate.***



3. *On the lingual or tongue side of the denture, with a denture bur or sandpaper cone, make a slight indentation to allow for attachment of the plastic to be added.*



4. *An outline of the reinforced area desired can be smoothly boxed in, using plain pink baseplate wax.*

Technique to Provide Relief

The following technique is simple and can be done at the chair in fifteen or twenty minutes:

Step One—Check the spot of irritation with indelible pencil or marking paste to see where the denture makes its first contact with the patient's palate (Fig. 2).

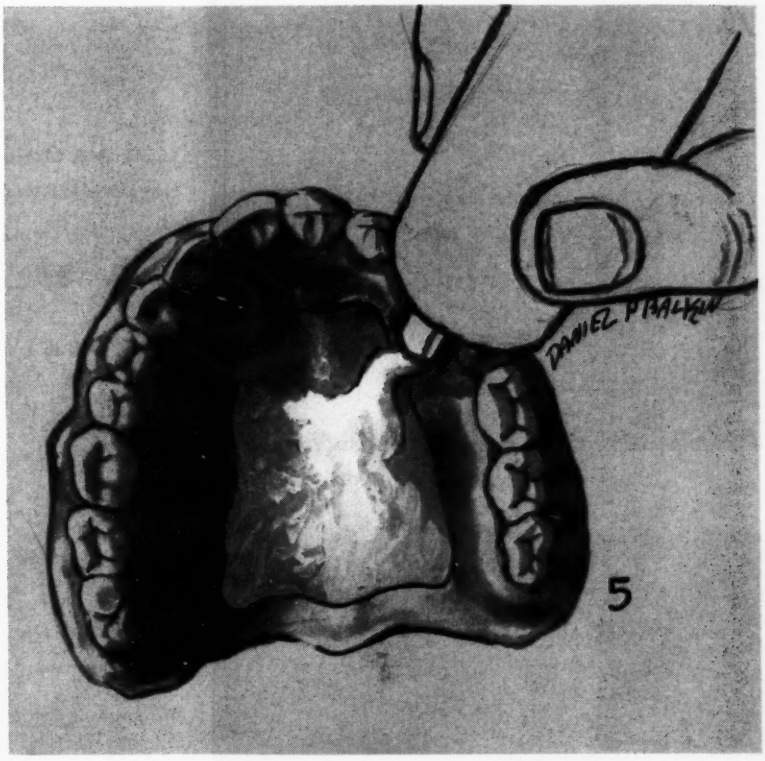
Step Two—On the lingual or tongue side of the denture, with a denture bur or sandpaper cone, make a slight indentation to allow for attachment of the plastic to be added (Fig. 3).

Step Three—An outline of the reinforced area desired can be smoothly boxed in, using plain pink baseplate wax (Fig. 4).

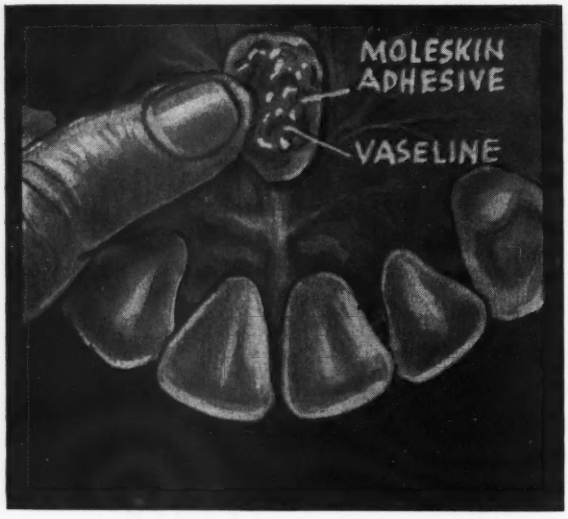
Step Four—Using powder and liquid, the area is reinforced with quick cure plastic (Fig. 5).

Step Five—Within a few minutes the plastic will have set and the relief desired in the vault area may be obtained without fear of destroying the denture.

Suite 512, *Grant Building*



5. *Using powder and liquid, the boxed area is reinforced with quick cure plastic.*



1

Clinical and Laborator

Relief Area Over a Torus

Stewart M. Johnson, D.D.S., Pittsburgh

1. Cover the palatine torus with a piece of moleskin adhesive that has been cut to the size and shape of the torus. Dry the torus and place the adhesive over it. Coat the exposed surface with petroleum jelly and take the impression. When the adhesive is removed a perfect relief area is formed in the impression.

2

Expressing Mercury from Amalgam

S. M. Dooreck, D.D.S., Brooklyn, New York

2. Place the amalgam in a squeeze cloth and put in the jaws of a jeweler's vise. On the cross-bar place the lower third of a paper cup to catch the mercury that is expressed from the amalgam mix.

3

Freeing "Frozen" Instruments

Ivan T. Shaurette, D.D.S., Phoenix, Arizona

3. Aromatic spirits of ammonia is effective when used to free "frozen" instruments.

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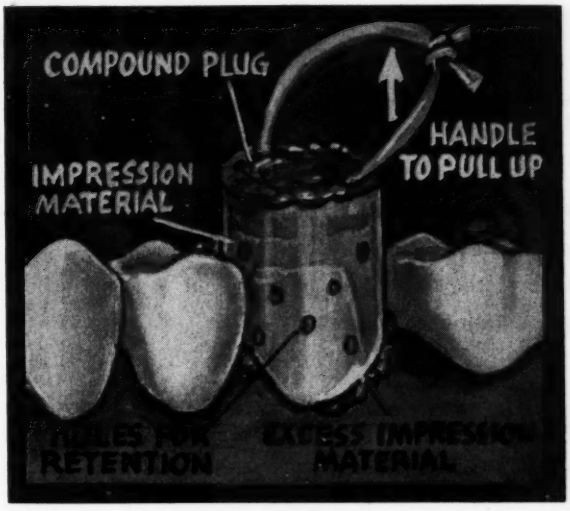
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Removal of Rubber Base Impressions

Arthur M. Hartman, D.D.S., Sherman Oaks, California

4. Knot a loop of dental tape through the top of a copper band before placing the modeling compound plug. When this looped tape is used as a handle the impression may be removed without danger of distortion.



4

Sharpening of Cutting Instruments

Frank C. Vavra, D.D.S., Moiese, Montana

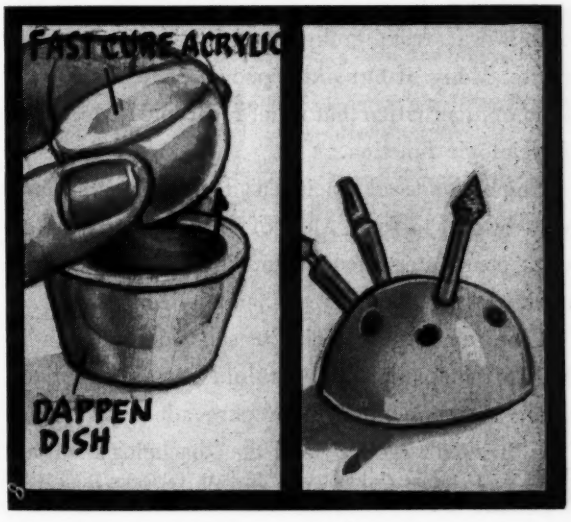
5. Use a ¾-inch heatless stone with a glazed face. Place a ⅝-inch or "X" fine sandpaper disc on the face of the stone. Mount this assembly on a mandrel. This makes an excellent sharpener for cutting instruments.

5

A Convenient Bur Block

C. R. Herrick, D.D.S., Hobart, Indiana

6. Pour a mix of fast-cure acrylic into a dappen dish. When the mix is set, soak it in water and remove the acrylic. Bore holes in the acrylic to make a bur block to be used on the instrument tray.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 568 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S *Page*

THERE has been relatively little attention given to the dental problems of the aged. A few articles on geriodontics have appeared in the dental literature. One of the better and more recent is the detailed presentation by Ziegler.[1]

With a population being comprised of more and more older people the dental and nutritional problems of this group become more pressing. Sore teeth and ill-fitting dentures make eating less pleasurable among the aged. When the pleasure of eating is decreased anorexia may develop and with it the dangers of malnutrition. In turn, malnutrition may lead to physical or mental deterioration.

The anorexia of the elderly is certainly not exclusively a matter of dental disease or discomfort. There are other reasons for aversion to food. An article in the *Psychiatric Bulletin*[2] lists these factors: physiologic reasons, 41 per cent; social, 30 per cent; economic, 30 per cent; others 9 per cent.

Among the physiologic reasons are the failing endocrine and digestive functions that often accompany senescence. As the organism begins to degenerate all the vital functions are depressed. Disorders of digestion are common and to avoid this kind of distress the old person may begin to avoid certain foods.

The lack of physical work, or exercise, and the withdrawal from group participation reduce appetite. Many of our older people have accepted a kind of hibernation that is not favorable to optimum physiologic function.

Some of these older citizens develop superstitions with respect to food. Most of them are unaware of what constitutes adequate nutrition. They attempt to live on soft foods, sweets, and coffee.

Chief among the social reasons for anorexia is lack of companionship. The old person who lives alone is not inclined to prepare adequate meals. The "widow's scurvy" and the "bachelor's starvation" are common among them. Many such elderly persons are required to live in places that are not easily accessible to food stores or they are in dwellings where cooking facilities are inadequate. As a result many of these aged folk attempt to subsist on canned and packaged foods.

The nutritious foods are the most expensive. The aged person who is existing on meager savings or on inadequate pension has an economic reason for his anorexia. Certainly not all old people are poverty stricken. Some who are not have developed a miser-like kind of frugality that prohibits the expenditure for proper food.

The dentist may perform a valued service in correcting the mouth conditions that lead to anorexia among the aged. Dental rehabilitation, however, is only one aspect of treatment. The broader view is expressed in the *Psychiatric Bulletin* in these words:

"Significant advances have been made in recent years in understanding the special requirements of the aged. Adequate treatment necessitates thorough study to determine whether the patient has a dietary or hormonal deficiency. Provision of a definite nutritional regimen is then an essential part of the treatment of senile anorexia. Many persons in advancing years lose their ability to make reasonable judgments regarding the constitution of a balanced and adequate diet. In such instances even an improved appetite may still be satisfied by nutritional inadequacy. The services of a qualified nutritionist are therefore highly desirable. A balanced and quantitatively sufficient diet will not suffice in the aged. Palatability and ease of preparation and mastication may be essential to any continuation of a good appetite. In addition it is important to recognize the financial capabilities of the individual patient in making nutritional recommendations. The general sense of well-being that results from the return of a good nutritional status is often a sound guarantee against the return of the senile anorexia."

[1] Ziegler, J. Eugene Geriodontics, J. Southern California D.A. **24**:29 (Sept.) 1956.
[2] Psychiatric Bulletin **6**:39 (Spring) 1956.

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MEDICINE and the Biologic Sciences

Viral Hepatitis

The organisms responsible for the two forms of viral hepatitis have not been isolated nor have specific tests for the viruses been devised. The similarity of the two agents is suggested by common transmission by inoculation and the semblance of the illnesses produced. Both viruses are unusually resistant to inactivation by physical and chemical means.

Infectious hepatitis caused by virus A is most commonly acquired by the fecal-oral route. The incubation period is from fifteen to forty days. Usually the onset is febrile and acute.

Serum hepatitis from virus B is almost always acquired parenterally. It incubates in sixty to one hundred and sixty days and has an insidious and afebrile onset.

Immunity to one does not extend to the other. Homologous immunity with virus A disease makes prophylaxis with gamma globulin efficacious. Homologous immunity is not apparent with virus B disease.

Carriers are the most important source of infection for both viruses. Control is extremely difficult and depends upon breaking the transmission cycle. With infectious hepatitis, this consists of measures to interrupt the water-borne, food-borne, or person-to-person transmission of infection and of prophylaxis with gamma globulin.

With serum hepatitis, measures of control are specifically directed to preventing transmission of the virus from person to person by inactivating or eliminating the organism from human blood or blood products used diagnostically or therapeutically and preventing contamination by inadequately sterilized instruments.

Chemical sterilization of instruments is ineffective. Instruments should be boiled thirty minutes or autoclaved at 121 degrees Centigrade (249.8 Fahrenheit) and 15 pounds of pressure for twenty minutes. Sterilization should be preceded by thorough washing to prevent drying or coagulation of organic material. Needles and syringes should be sterilized separately and used only once. Disposable, single-use instruments are ideal.

Blood donors should be rejected who have had hepatitis, have had close contact with hepatitis during the preceding six months, or have received a blood or plasma transfusion in the preceding six months.

Need for sterilization of blood products increases when the donor pool is large. Blood from only one donor would be ideal but is impractical in planning plasma use for emergencies.

Present methods of ultraviolet irradiation are difficult to apply with certainty since cases have been reported with irradiated material considered safe. Such cases show a longer incubation period, less severe illness clinically, and lower serum bilirubin levels. Ultraviolet irradiation has the advantage of not altering the serum proteins. Blood products such as immune globulin and human serum albumin appear to be safe, but hepatitis may occur after the use of topical thrombin.

The treatment of viral hepatitis depends chiefly on bed rest and diet. No approach, however, is known to be valid.

Murray, Roderick: Viral Hepatitis, Bulletin New York Acad. Med. **31**:341-358 (April) 1955.

Sciatica

Sciatica is caused by root compression syndrome, usually in the region of the intervertebral foramen, or irritation of the nerve endings of the posterior rami or the meningeal nerve. This is termed true referred pain. Conditions in the back and pelvis which may cause referred sciatic pain are strain of the facet joints, myositis, fibrositis, arthritis, herniation of nucleous pulposus and inflammatory states such as tuberculosis, osteomyelitis, undulant fever, and tumors.

Sciatics caused by root compression may result from encroachment upon the nerve, usually in the region of the intervertebral foramen. Common causes include pressure from a disc, arthritis of vertebral bodies, enlargment or swelling of the interfacet joints, spondylolysis, and spondylolisthesis.

With typical root compression syndrome, the patient has slight disability because of back pain that arises spontaneously or after varying degrees of trauma. The pain subsides after several weeks. Repeated attacks then occur which are often relieved by manipulations. The patient is completely free of pain and disability during remissions. The attacks gradually increase in severity and radiate further into the leg and foot. Disability increases and the patient is no longer relieved by manipulations.

The patient leans forward and to one side during attacks. The patient walks with a limp that favors the affected side and often is bent forward with muscle spasm and sciatic scoliosis. Frequently a hyperflexed position of the spine which tends to open up the intervertebral foramen, affords relief. If the ailment persists for a long time, the patient may describe a burning or numb sensation in the leg or foot. Lifting, coughing, sneezing, and bowel straining may produce leg pain.

Conservative treatment should be tried for even the most severe sciatica. This consists of rest on a hard bed with knees and upper body elevated. Mephenesin, 1 gram every four hours and local heat help to relieve the spasm. Such therapy is continued for ten days to three months depending on the patient's progress. It is supplemented with flexion exercises after acute pain subsides. When the patient becomes ambulatory, a flexion cast or brace is applied and worn until the patient is asymptomatic. Conservative treatment fails in only about 15 per cent of patients.

Deyerle, William Minor, and May, Virgil R.: Sciatica - Etiology and Treatment, Clin. Orthoped. No. 4, *pp.* 166-179, 1954.

Radiation Hazards

Indiscriminate, inaccurate or unnecessary use of roentgen or radium irradiation is often responsible for local carcinomatous degeneration and disfigurement of the skin many years after treatment. The use of radiation over the epiphyses of growing children may produce serious skeletal deformities.

Patients with such radiation injuries may become addicted to narcotics in an effort to relieve the pain or persistent itching. Often extensive plastic surgical repairs are necessary.

Unusual susceptibility or improperly adjusted equipment may be responsible for some radiation injuries. One of the principal causes is the failure of one therapist to ascertain accurately how much radiation the patient may have had previously. Another potential source of difficulty is the use of postoperative radiation as a supplement to inadequate surgery.

Permanent alleviation of the pain and itching of chronic radiation dermatitis, ulceration or neoplastic degeneration is obtained only when all the involved tissues have been excised. Postradiation skin changes include atrophy, complete vascular obliteration, and necrosis which may degenerate into squamous cell carcinoma in over 50 per cent of cases.

Conservative therapy is generally unsuccessful. The tissues must be resected radically in order to reach a good blood supply. Failure to excise all of the damaged tissue leads to further breakdown and ulceration.

To avoid the disfigurement and possible danger of chronic radiation injuries, roentgen and radium therapy should not be used when surgery can completely cure the patient.

When radiation must be used to destroy a deep-lying lesion not susceptible to surgical removal, skin changes are unavoidable. The preferred treatment in such instances is employment of primary wide excision and plastic repair. When the usual amount of radiation fails to heal superficial neoplastic lesions promptly, radiation should be abandoned immediately in favor of surgical removal.

Greeley, Paul W.: Hazards of Radiation, Indus. Med. **24**:227-229 (*March*) 1955.

Electric Burns-Treatment

The distribution systems of electric burns in the human body are the skin surface, the venous circulation, combined skin and venous systems, and the nervous system. Points of entrance and exit of the current apparently determine the course of the current over the various distribution systems, singly or in combination. In most instances, the current follows a course directly beneath the skin through the superficial blood vessels, causing extensive thrombosis. The nervous system and deep structures are rarely affected.

The degree of burn depends on type of current (direct or alternating), voltage, amperage, resistance of the tissues, duration of contact, and character of the ground as well as on the points of entrance and exit of the current. Most severe electric burns are due to high voltage. However, 100-watt electric lights or household equipment may cause serious damage.

Often, therapy of intrinsic electric shock is necessary before burns are treated. The most serious effects of shock are respiratory failure and cardiac fibrillation. Immediate resuscitation is important to prevent brain damage due to anoxemia.

Electric burns are classified as first, second, and third degree. With first degree burns, blanching of the superficial layers of the skin with vesicle formation is noted. With second and third degree burns, the center has a charred appearance and is surrounded by a blanched areola with thrombosed veins. This zone is encircled by an area of hyperemia. These burns vary in size from punctate involvement to vast destruction of tissue, either of slight depth or of all structures of the affected parts.

First-aid treatment consists of free application of a protective covering with an oil base. The burn should be cleansed with tepid water and neutral soap. All necrotic or burned tissue is then radically excised with aseptic technique under general anesthesia. Debridement should be done within twelve hours since lines of demarcation between devitalized and healthy tissue gradually disappear.

When only the skin and subcutaneous tissues are involved, debridement may be done at once, since an edematous demarcation between burned and normal tissue appears immediately after the burn. Involved muscle has a typical milk-chocolate color not seen with other conditions and is bloodless and easily cut.

After completion of debridement immediate closure of the wound can be done either primarily or with a split-skin graft or a reconstructive procedure. This method shortens the period of disability and assures a good functional and cosmetic result with a minimum of reconstructive procedure.

Electric burns involving bone cannot be treated by immediate radical removal. If the bone is permitted to remain intact for four to six weeks, the appearance of a darkened bone will outline the destroyed area. Granulations are more readily formed under the protection of necrosing bone and, after removal of the granulating sequestrum, the surface is ready for

grafting or other reconstruction.

Complications of contact with high-voltage electric energy include development of cataracts and fracture of a lumbar vetebra caused by a muscular contraction.

Hyslop, Volney B., and Miller, Ernest W.: Treatment of Electric Burns. J. Internat. Col. Surg. **23**:481-486 (*April*) 1955.

Senility

The change from normal senescence to senility may occur in any decade after the fifth. The onset may be abrupt or gradual and almost imperceptible.

Symptoms resemble manifestations of a psychosomatic disorder. Early features are dislike of change, constriction of activity and interests, difficulty in comprehension, inefficiency in performance of familiar duties, and a tendency to reminisce and repeat.

Transport of oxygen and carbohydrate to the brain cells and utilization in the cell determine brain activity and life or death of cortical neurons. The exact relationship of this process to mental decay is unknown.

With arteriosclerotic dementia and senile dementia a decreased cerebral blood flow with a concomitant decrease in brain metabolism is noted. The causative factors may be hypertension, arteriosclerosis, and thrombosis.

Utilization of glucose decreases with age. Fructose utilization is only slightly affected and may be used to supply the carbohydrate needs of the brain cells in the aged.

Longevity is a family trait. The age of onset of senile dementia is frequently the same in several generations of the same family. The most important hereditary factor may be the capacity for survival in the form of physical and psychologic characteristics rather than vulnerability to deterioration.

Senile deterioration does not depend on age. A gradual loss of flexibility and learning power occurs as people grow older. The changes of dementia are selective. Some qualities are maintained in good order while others deteriorate. Organic and psychologic tests may reveal early senile decay.

Depressive, toxic, and schizophrenic reactions in the aged can be treated with success. Among elderly patients who have nervous breakdowns, recovery and survival rates are twice as good when the disorder is a schizoaffective state as when an organic lesion is diagnosed. Psychology and social therapy may revise apparently hopeless senile decay, but the separation from a familiar surrounding required by hospitalization may be a threat to survival. Disintegration of family life contributes to feelings of loneliness, not being wanted, and uselessness. All these are important factors in senile psychosis.

Wilson, David C.: The Pathology of Senility, Am. J. Psychiat. **3**:902-906 *(May) 1955.*

Tuberculosis

Patients frequently deceive themselves consciously or unconsciously about the nature of the initial symptoms of tuberculosis because the disease is much dreaded. This denial may be based on a self-deceptive,obstinate, cheerful, or defiant refusal to admit illness.

Some patients delay hospitalization until the disease is far advanced because of unbreakable feelings of duty to their work and families. Others reject hospitalization because of unwillingness to give up close dependent relationships with parent or marital partner. Some, averse to abandoning the pleasures of outside life, deceive themselves in a manic manner about the seriousness of their condition. Some patients refuse necessary surgical procedures because of fear of mutilation or disfigurement.

Interruption of treatment by self-discharge occurs most frequently in rebellious patients, who are acting out resentment, duty-bound patients who cannot tolerate guilt feelings aroused by inactivity, and family-bound persons who depend heavily on the love and affection of home.

Relapse requiring rehospitalization is directly related to failure to adhere to medical advice after leaving the hospital. Some persons are unwilling to lead restricted lives and give up former pleasures. Others motivated by exaggerated senses of responsibility return to work prematurely.

Study of the premorbid personality reveals equally strong dependent needs in persons with favorable or with unfavorable courses. Important differences, however, are observed in the manner in which these dependency needs are handled.

Subjects with unfavorable courses show a greater pressure of dependency needs as expressed in terms of requirements for affection and social acceptance and for submission to authority. Those with favorable courses appear more mature, less ambivalent and in less conflict over dependency needs. These patients are also less concerned about getting attention and are more capable of accepting responsibilities.

Flexibility seems essential for successful adjustment to stress of illness. Flexible patients find substitutes for gratifications that must be abandoned and, therefore, are less frustrated, aggressive and resentful than rigid persons.

A knowledge of the patient's background and personality is of help in deciding upon the best manner of communicating to him the diagnosis and in planning the course of action. A sympathetic awareness of the problems of the individual is necessary to deal with the situation adequately. Conscientious, duty-bound patients should be encouraged to do less than they feel is expected of them. Anxious, overdependent patients should be encouraged to do more than their fear of reversal allows. Refractory, hostile patients need an opportunity to air resentments without fear of retaliation from hospital authorities.

Wittkower, E. D.; Durost, H. B.; and Laing, W.A.R.: A Psychosomatic Study of the Course of Pulmonary Tuberculosis, Am. Rev. Tuber. 71: 201-218 (*March*) 1955.

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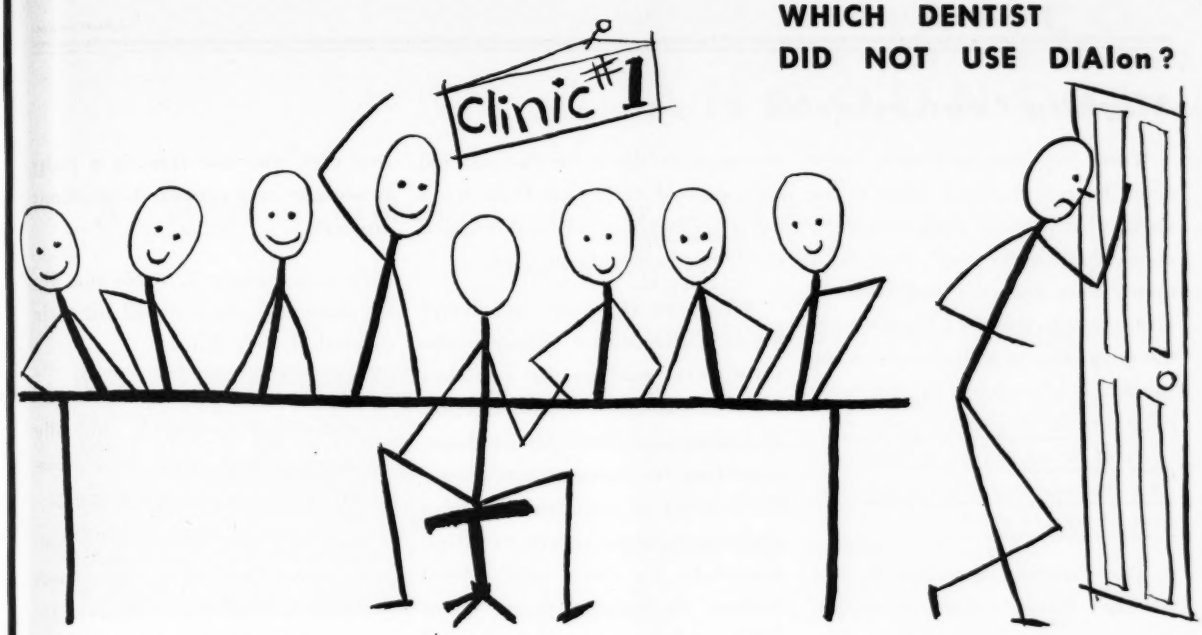

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Slightly Controversial

What does the profession know about fluoride therapy? More to the point, what does the profession think about fluoride therapy? And from there—what does the profession do about fluoride therapy? When we sift the great amount of literature on the subject it gets down to one main point, i.e., fluoride decreases the solubility of dental enamel in acid—and makes the surface of the enamel more resistant to acid attack.[1]

The burning question is not whether fluoride therapy works. That is an established fact. The question is—how do we apply the therapy? Drinking water? Topical application? Toothpaste?

While that argument is raging we would like to present a theory of our own. It isn't an attempt to displace any or all of the above. But it seems to us that if a tooth decays in spite of the above methods or because of a lack of them—then why not place the fluoride in the tooth by means of a filling?

The theory is simply this: If a deciduous or permanent tooth decays, it is because the surface of the enamel is not resistant to the acid attack. Since it already has exhibited non-resistance it is liable to another attack after being filled. So let us apply fluorides directly to the tooth on the premise that the fluorides will then render the tooth immune to acid in the future.

We do not believe that simple topical application will do this efficiently because many hours of continuous contact are necessary for the enamel to completely absorb the fluorides and become acid resistant.[2] Only by a fluoride filling can the requirement of continuous contact be attained.

What are the risks involved? First, conventional filling materials were used as the vehicles, i.e. amalgam, zinc-oxide eugenol, and plastic cement. All of these, including the cement, have been the subject of numerous articles attesting to their safety as filling materials. To these were added sodium fluoride in from ½ to 10% amounts. The addition of sodium fluoride is considered no risk for the following reason. Sodium fluoride was shown to be less harmful to the pulp than the orthophosphoric acid of zinc cement.[3]

A fluoride filling material containing 10% fluoride was distributed to over fifty key dentists. After one year, all those reporting stated that no harmful or untoward effects were noted during or after placement; that up to the time of reporting, no further cavities had developed. We must emphasize here that no claim on that aspect is made or implied. But we do state that no further decay should be expected due to the overwhelming amount of evidence in that direction.

We also wish to emphasize that these filling materials are not intended to protect the pulp. They are for protection of the enamel. We feel that in all cavities there should be a pulp insulator in the form of Kal-Drox or some similar calcium hydroxide material. (It is curious that a few of our key men did use this as a pulp protector and reported excellent success.)

So here we have it. Three new filling materials, and we shall list their theoretical indications.

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The above filling materials may seem "slightly controversial." There is no doubt that they are. But we have decided to take this stand on the basis that we believe they are needed in dentistry today. We must abandon the solemnly accepted old idea of a filling material simply restoring a hole in a tooth. A filling material can also contribute to the future health of the tooth.

[1]J.D.R. June 1955—350 Hatton *et al.*
[2]J.D.R. June 1955—357 Hatton *et al.*
[3]J.A.D.A. May 1956—546 Perreault *et al.*

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Iron Deficiency Anemia

In the normal person the amount of iron absorbed by and lost from the body is exceedingly small. There are certain periods during life when the body iron requirements are increased. These are infancy, adolescence, and pregnancy. The most important of these is infancy. Here, existing iron stores are rapidly depleted, and a deficient diet can soon produce iron deficiency.

Once a full complement of body iron has been accrued, the adult is independent of iron intake. He becomes iron deficient only through blood loss.

In the production of iron deficiency, iron stores are exhausted before anemia appears. If any question in diagnosis from the usual laboratory tests exists, the direct examination of marrow for hemosiderin will establish the diagnosis. It is of obvious importance to confirm the diagnosis by specific therapy and to determine the cause of the iron deficiency.

Response to orally given iron therapy is highly predictable. Failure of response usually indicates a mistaken diagnosis. In a small but significant group of patients unable to take iron because of gastrointestinal symptoms, unable to absorb iron or in need of iron reserves, parenteral administration has distinct advantages. The saccharated oxide of iron is an effective preparation for this purpose.

Coleman, D. H.; Steven, A. R., Jr.; and Finch, C. A.: Treatment of Iron Deficiency Anemia, Blood **10**:567-581 *(June)* 1955

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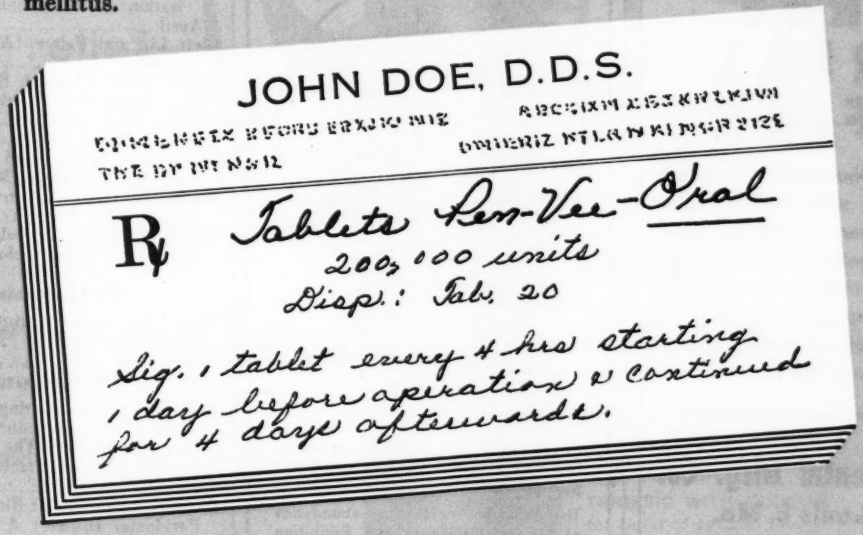
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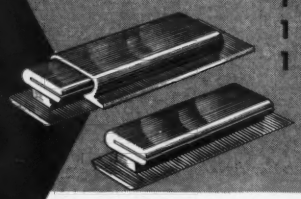

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Cleft Lip and Palate

Occurrence of Abnormality

Some degree of cleft lip and palate occurs in about one in every 850 live births. There is a wide difference, however, in reports of incidence, and the apparent increasing incidence may merely reflect more accurate statistics, the effect of laws requiring the reporting of all congenital anomalies, or a greater number of conceptions resulting in live births.

Classifications of Cleft Lips—One authority classifies cleft lips as simple, in which there is a unilateral cleft without an associated cleft of the maxilla; complete, and incomplete cleft, with bridging between both edges of the cleft; and cleft palates as those involving (1) the soft palate only, (2) the hard and soft palate and extending no further than the incisive foramen, (3) the hard and soft palate and alveolar arch of the maxilla on one side—usually associated with unilateral cleft lip, and (4) the hard and soft palate and alveolar arch of the maxilla on both sides, usually associated with bilateral cleft lip.

Bilateral Cleft—It was found in one investigation that in about 65 per cent of cases the cleft is bilateral.

Causative Factors

Almost every conceivable causative factor has been suspected of producing this deformity but in most cases with scant evidence. In animal experiments it has been found that a deficiency of riboflavin or pantothenic acid in the diet of the mother during pregnancy, the administration of an excess of cortisone or excess of vitamin A will carry an appreciable increase in the number of offspring born with cleft palate and other deformities.

Rubella—Although the incidence of congenital deformities in human beings is increased by the presence of rubella, this does not seem to apply to cleft lip and palate.

Genetic Factor—The fact that more than one member of a family has this deformity in about 30 per cent of cases suggests a genetic factor.

Results of Surgery

According to one investigator unsuccessful results from surgical treatment are due to poorly conceived, badly executed, or ill-timed operations. Other investigators believe that postoperative maldevelopment may result from failure in healing or excessive surgical trauma, scarring, tension, or loss of tissue.

Causes of Failures—The most common surgical error resulting in maldevelopment is wiring or other forcible correction performed too early in infancy. Another factor is undue tension in lip repair. The greater the number of operations on the patient, the greater the interference with the normal growth and development of the involved parts.

Time Factor in Repair—In most hospitals lip repair is performed when the child is between four and six weeks old, but in the New York Hospital it is done immediately after birth. This is an aid to feeding and obviates the necessity for the mother and child to return to the hospital.

Time of Repair Determined by Age—One authority believes the best results are obtained if the lip is repaired when the infant weighs 12 pounds (5,443 grams) regardless of age.

Repair at One Year Advocated—It has been recommended that repair of the palate be done when the child is about one year old so that normal speech may develop without special training. This does not hold if the child is deaf or mentally subnormal, if the parents speak indistinctly, or if the home environment is poor.

Disadvantage of Early Operation—Some limitation of normal growth and development will be the result of any operation for this condition in early life. One investigator, however, did not observe maldevelopment of the maxilla as a result of closures of the hard palate in children between 18 and 24 months of age.

Repair Before School Age—Some workers in this field believe that it is important to accomplish maximal repair before the child reaches school age, as in this way he will be less apt to be treated as a curiosity by his school mates.

Cleft Palate Team

It has been found that best results can be obtained if a team, consisting of a pediatrician, plastic surgeon, otorhinologist, pedodontist, orthodontist, dental prosthetist, psychologist, speech therapist, social worker, and nurse, collaborates. Such teams do not need to convene at one place and one time but must be taught to think in terms of the potentialities of the other members and be able to talk in the special language of those members.

Importance of Coordinated Treatment—The functioning of the cleft palate team assures that the right thing is done by the right person at the right time regardless of which member is consulted at any stage of the treatment.

Preventive Measures in Speech Therapy—In the field of speech ther-

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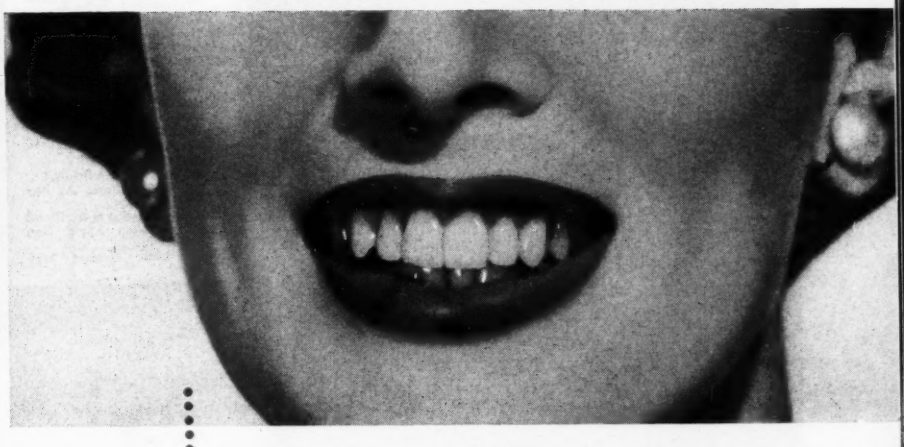

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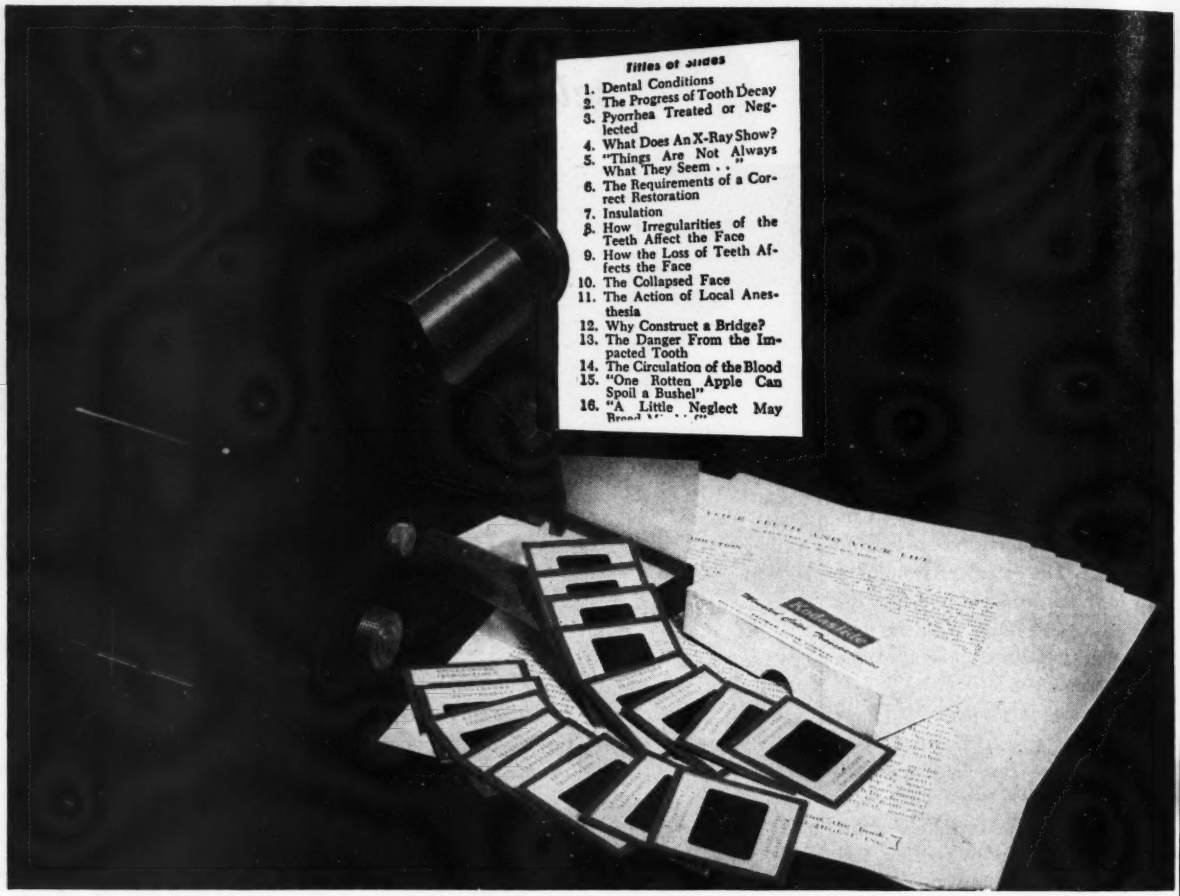
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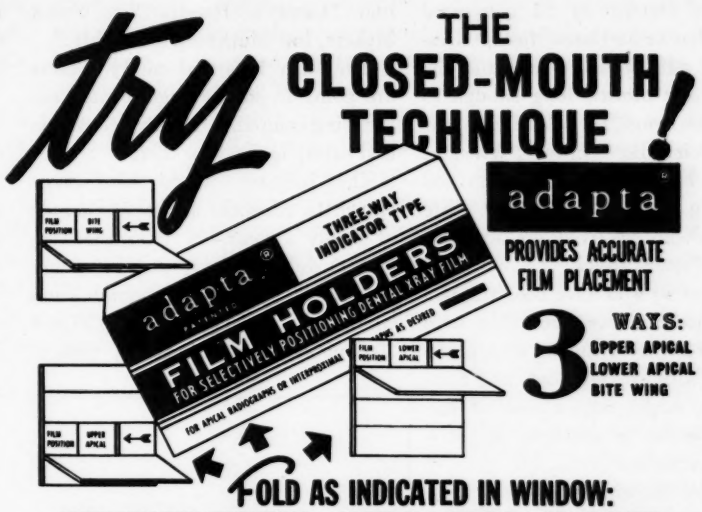

Contra-Angles

"They Stayed in Bed"

One of the malaprop boys of Hollywood, a motion picture producer I believe, is credited with the observation that he should have "stood in bed" when something went wrong in his hectic world. He would have had eminent company. Elizabeth Barrett Browning, Florence Nightingale, Charles Darwin were three preeminent Britishers who took to their beds or couches when the world pressed in and became too hard to handle. There are no published records, that I know of, of this convenient kind of escape mechanism among Americans.

Cecil Woodham-Smith of the Irish Fitzgeralds tells in *Harper's Magazine* how these three famous people set the world on fire without too much expenditure of energy.

The poetess, Elizabeth Barrett Browning, decided that she had some strange disease of the spine. She stayed in her bed, or at least in her room, for three-quarters of her lifetime. In that solitary and dingy setting she turned out her poetry. In 1846 at the age of 40 she revived enough to dash off to Italy with Robert Browning where she found strength enough to produce a lusty son.

Florence Nightingale after her conspicuous service as a nurse in the Crimean War and as the founder of modern nursing spent more than 50 years in bed, convinced that she had some form of heart disease. She died in 1910 when she was 90. Her protracted interval of a half century in bed was not one long and unproductive nap. She found the strength and the time to write the Indian Sanitary Report of 1000 printed pages.

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Charles Darwin at 22 convinced himself that he had heart disease. Despite this self-diagnosis he found the vigor to stir himself long enough to ship on the *Beagle* for a hard five-year stint of scientific discovery. When he returned home he went back to bed to spend a pleasant and profitable life of invalidism. He lived for 50 years after his "heart attack."

Those of us who have been trapped in the modern race, scurrying here and there and not knowing why, pressed down with appointments and commitments, might take a look at Mr. Darwin as he is pictured by Mrs. Woodham-Smith:

"Charles Darwin never sat on committees, never went to official dinners, saw only the people he wanted to see, read only the books he wanted to read. Metaphysics and religion he found brought on a headache at once. As the great man lay on the sofa he was not idle. His mind was at work, and it was in those long hours of silence and solitude, lying on his sofa, meditating, that Darwin reached his bold conclusions. He himself expressed his most valuable quality as 'unbounded patience in long reflection over any subject.' For his long reflecting he needed his sofa."

Most of us who have rent to pay, or mortgages to be met, or food to buy, or children to educate might have a craggy time of conducting our affairs from our bed. If we "stayed in bed" too long our creditors might lose their patience. Our family would certainly do so.

Few of us can afford the luxury of the kind of psychosomatic illness that will keep us in bed and away from the workaday world. All of us, though, can gather some profit from examining our activities to find which ones are unproductive, utterly time wasteful, or completely nonsensical. Many of our activities are mere pawing of the air and meaningless yak-yak. On many occasions we would be better off (and so would be everybody else) if we had "stayed in bed."

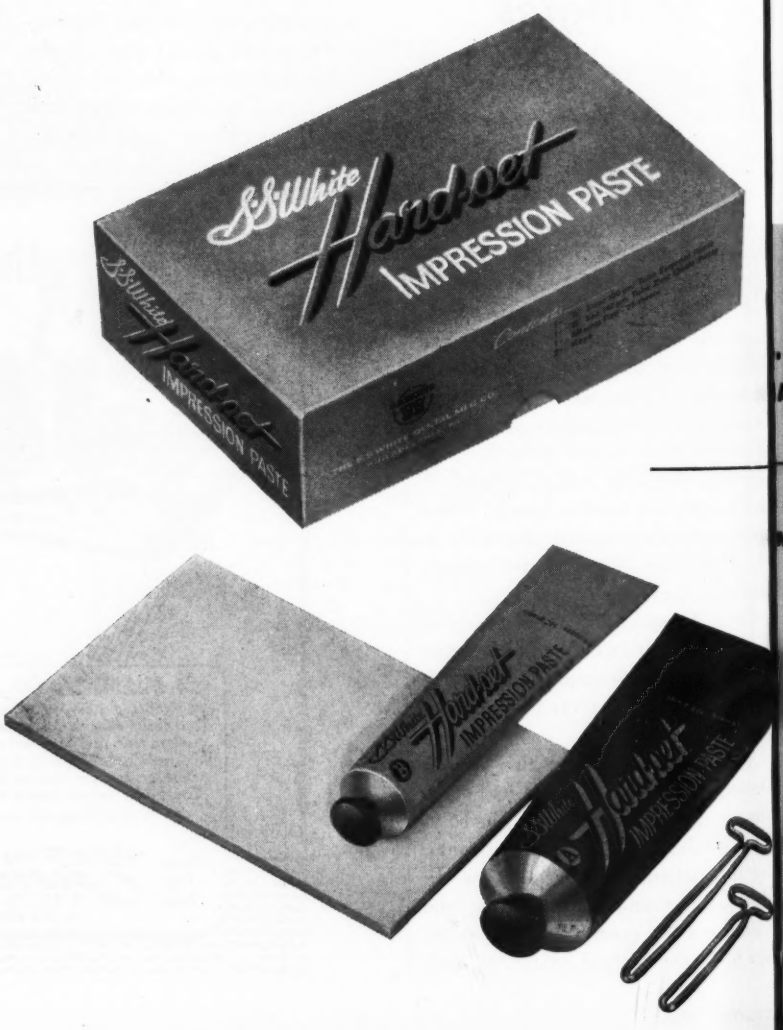
The Candy Men are Running Scared

No less a pillar of journalism than *The Wall Street Journal* says in a head line "Candy's Dandy, Say Sweet Makers, but Munching's Sagging."

The story tells that candy makers are going to start a sugar-coated advertising campaign to convince people that candy is good for them.

The industry would like every citizen to consume about 24 pounds of candy a year. In 1955 the consumers did the candy makers wrong and put away only 16.8 pounds each compared with 18 pounds in 1950 and 20.5 pounds in 1944. Candy makers blame dentists and physicians for this drop-off sales and are going to do something about it. No rough stuff: "There'll be no controversy with any other industry nor with the medical or dental professions."

I know at first hand something about the power of the sugar interests and how adroitly they operate. My wife and I prepared a cookbook SWEET WITHOUT SUGAR that gives recipes for desserts and other dishes that may be prepared without



the use of refined sugar. The foreword was written by our family friend, Barbara Eisenhower, the President's daughter-in-law.

Two of the largest book publishers in the United States were eager to publish until they talked with their front offices where subjects of dollars and business are discussed. In both cases they turned away from publication. In one case the managing editor stated honestly that he did not wish to offend the sugar-candy-soft drink-ice cream-bakery interests. Nowhere along the line were there questions of bribery or coercion involved, no threats of boycott, no strongarm tactics. It was a matter of business judgment not to offend industries that operate in billions of dollars a year.

I doubt if the sugar-using industries were even asked their opinions of such a cookbook and I am quite sure that the publishers did not show them the manuscript. I am not accusing the sugar interests of exercising any form of *direct* censorship, restraint of freedom of publication, or of pressure. Subtle forces are always more effective!

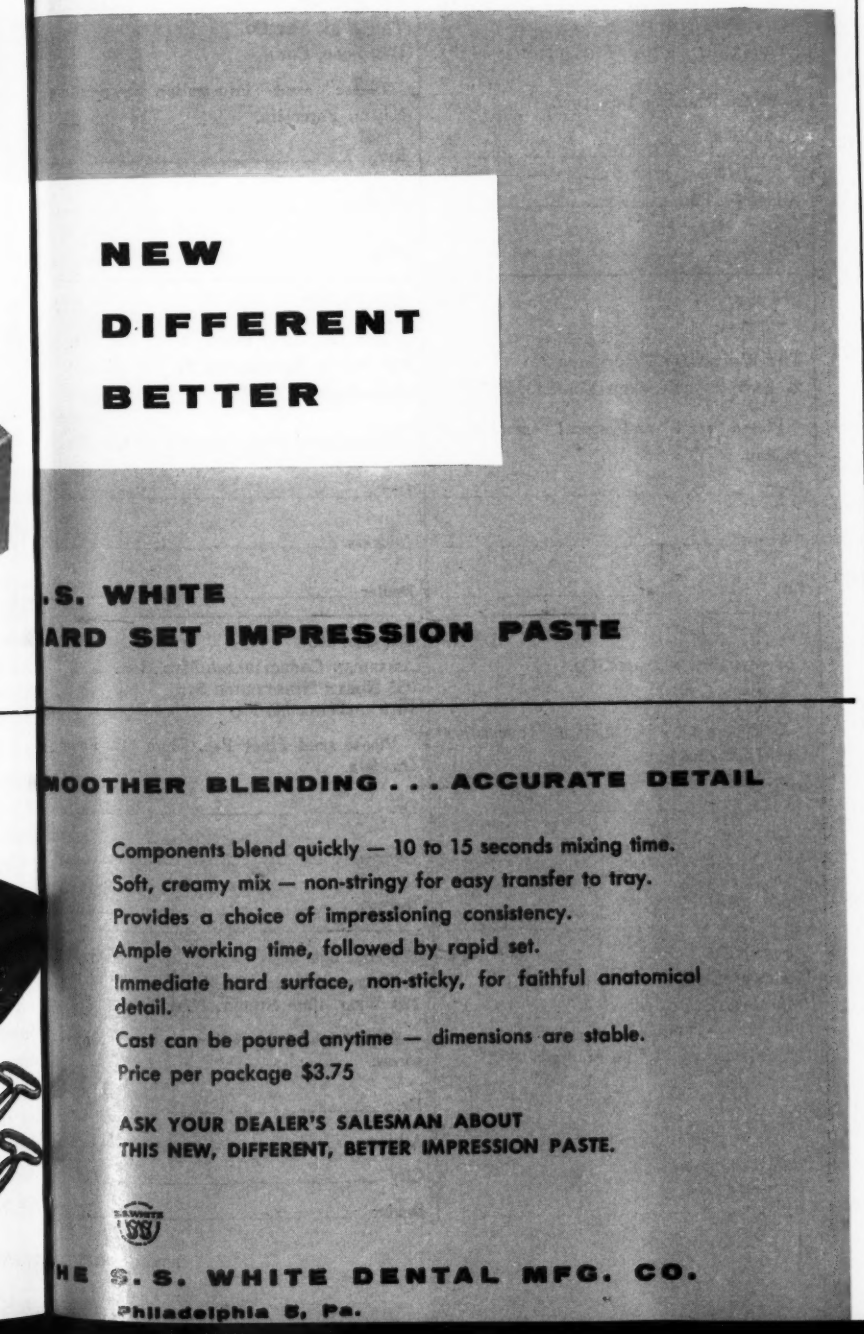
The only reason for pushing this personal experience into the light is to show that the $350,000 annual advertising campaign of the candy makers will be smooth and subtle: No controversy, no direct attack, no taking issue with scientific statements, no offense intended.

If the story in *The Wall Street Journal* is an indication we may even expect a patriotic note to be sounded in the public relations approach:

"If the candy makers campaign boosts national candy-eating habits, it also will benefit the Agriculture Department's efforts to get rid of farm surpluses. Latest industry figures show that candy uses up about $476 million worth of farm goods a year, including 771.5 million pounds of corn products, 390 million pounds of milk, 6.6 million pounds of eggs, and 173.6 million pounds of nuts and peanuts." Note well: the word *sugar* is not used.

See how it may be done: "Eat Candy for Prosperity." No mention made of tooth decay, obesity, of depletion of vitamin reserves, of disruption of mineral balances. Good business, first; good health, second.

E. J. R.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